Georgia Department of Transportation

Interoffice Memo
Office of Design Policy & Support

DATE: 5/19/2021

FILE: P.I.# 0015421
Walton County / GDOT District 1 - Gainesville
SR 138 @ SR 10/US 78 – Ramp – New Construction

FROM: Dave Peters for R. Christopher Rudd, PE, State Design Policy Engineer

TO: SEE DISTRIBUTION

SUBJECT: **APPROVED CONCEPT REPORT**

Attached is the approved Concept Report for the above subject project.

Attachment

Distribution:

Hiral Patel, Director of Engineering
Joe Carpenter, Director of P3
Albert Shelby, Director of Program Delivery
Carol Comer, Director, Division of Intermodal
Darryl VanMeter, Assistant Director of P3/State Innovative Delivery Administrator
Matthew Markham, Deputy Director of Planning
Kim Nesbitt, Program Delivery Administrator
Bobby Hilliard, Program Control Administrator
Eric Duff, State Environmental Administrator
Donn Digamon, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Erik Rohde, State Project Review Engineer
Patrick Allen, State Materials Engineer
Shajan Joseph, Assistant State Utilities Administrator
Eric Conklin, State Transportation Data Administrator
Attn: Systems & Classification Branch
Benny Walden, Statewide Location Bureau Chief
Kelvin Mullins, District Engineer
SueAnne Decker, District Preconstruction Engineer
Yulonda Pride-Foster, District Utilities Manager
Kimberly Kimbrough, Project Manager
BOARD MEMBER - 10th Congressional District

Project Concept Report

Project Type:	Operational Improvement	P.I. Number:	0015421
GDOT District:	One	County:	Walton
Federal Route Number:	US 78	State Route Number:	SR 10 & SR 138
Project Number:	N/A		

The proposed project is to add a ramp connection from SR 138/MLK Jr. Blvd southbound to SR 10/ US 78 westbound for an operational improvement project. SR 138 currently has no entrance ramp to westbound SR 10/US 78.

** Report updated 3-30-2021 to address review comments

Submitted for approval:

Michael E. Alligood — Precision Planning, Inc. — 7/16/2020 (Date)

Walton County — Local Government Sponsor — 7-21-20 (Date) — 8/12/2020

State Program Delivery Administrator — Date

GDOT Project Manager — 7-30-2020 (Date)

Recommendation for approval:

* Recommendations on file - KLP

* Eric Duff — State Environmental Administrator — 2-12-2021 (Date)

* Chris Raymond — For State Traffic Engineer — 4-22-2021 (Date)

* Joshua Taylor — For Project Review Engineer — 2-10-2021 (Date)

* Marcela Coll — For State Utilities Engineer — 1-28-2021 (Date)

* SueAnne Decker — For District Engineer — 2-10-2021 (Date)

* Albert Shelby — Director of Program Delivery — 1-27-2021 (Date)

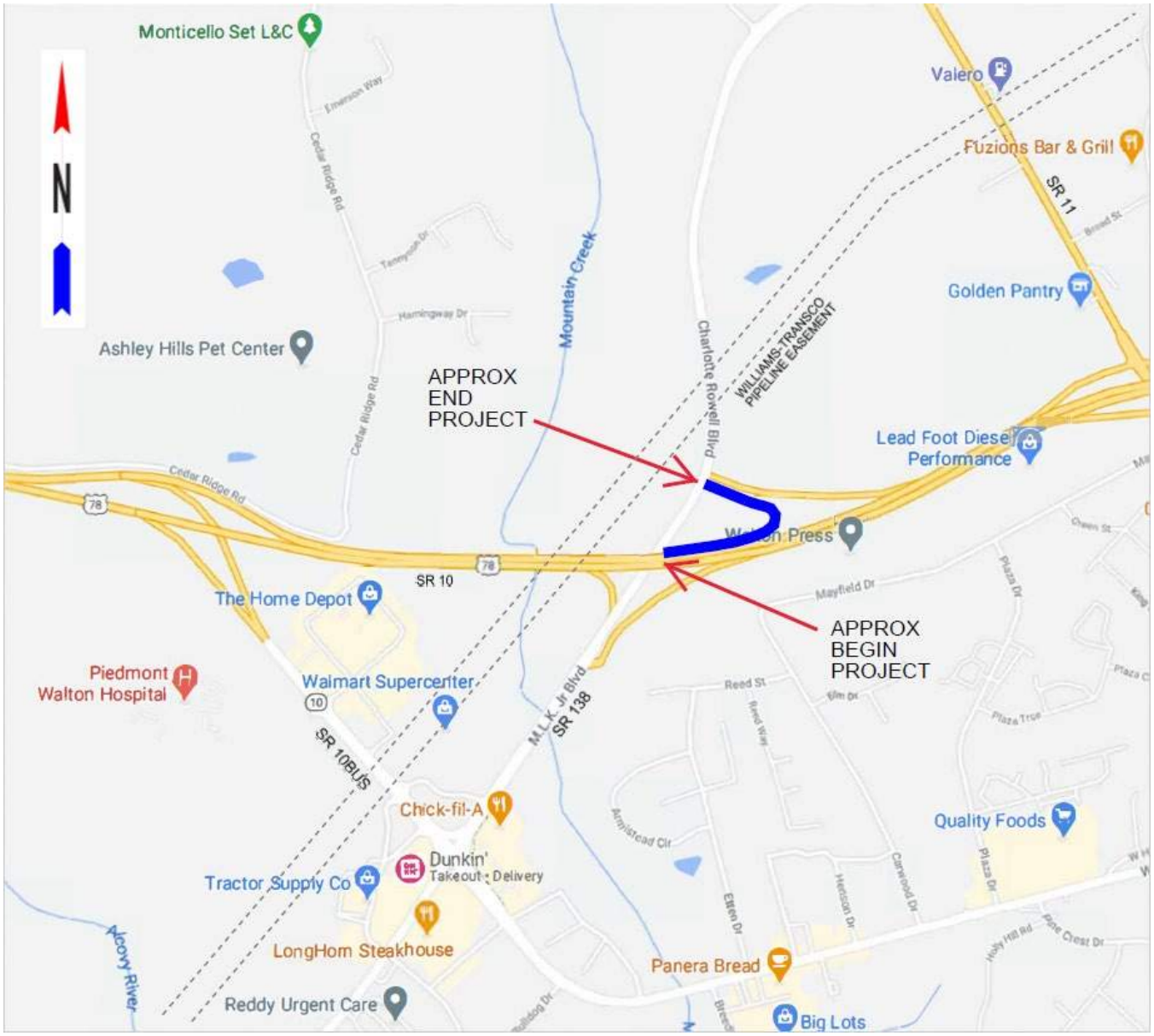
* Alan Hood — State Airport Safety Data Program Manager — 2-8-2021 (Date)

☒ MPO Area: This project is consistent with the MPO adopted Regional Transportation Plan (RTP)/Long Range Transportation Plan (LRTP).

☐ Rural Area: This project is consistent with the goals outlined in the Statewide Transportation Plan (SWTP) and/or is included in the State Transportation Improvement Program (STIP).

* Matt Markham — Deputy Director of Planning — 2-9-2021 (Date)

PROJECT LOCATION MAP



SR 138 AT SR 10/US 78
PI 0015421

This project is to add an on-ramp (loop) from SR 138/MLK Jr. Blvd to SR 10/US 78 westbound.

PLANNING AND BACKGROUND

Prepared By: Michael E. Alligood, Precision Planning, Inc. **Date:** *5/26/2020*

Project Justification Statement:

SR 138/MLK Jr. Blvd. is a rural arterial having two lanes, one in each direction, with intermittent turn lanes. SR 138 crosses under the SR 10/US 78 bridge and terminates into Charlotte Rowell Boulevard just north of a signalized westbound ramp terminus. Approximately one mile south of this terminus, SR 138 intersects West Spring St/SR 10Bus, which is currently the primary route to access westbound SR 10/US 78 from Charlotte Rowell Boulevard. Southbound traffic along SR 11 north of the project site and its intersection with Charlotte Rowell Boulevard primarily accesses westbound SR 10/US 78 via its interchange east of the project site. The predominant land use characteristic along this corridor is commercial. In an effort to alleviate current traffic congestion and prevent additional congestion on SR 138 and SR 10Bus generated by the developing community, local officials from Walton County and the City of Monroe met with Department officials during 2019 to propose joint state and local funding for the construction of a westbound on-ramp at the existing SR 138 - SR 10/US 78 interchange. As a result, and with unanimous support, the project funding agreement was issued on March 9, 2020 for PI No. 0015421. The project concept has been re-scoped from the original "slip ramp" configuration to a "loop-ramp" configuration due to the excessive estimated impact cost to Williams-Transco Pipeline facilities.

Existing conditions: The project site is located in Walton County, and inside the Monroe city limits. SR 138/MLK Jr. Blvd is a rural two-lane roadway with 12' paved lanes and a 10' shoulder of which 4' is paved along each side of the road. SR 10/US 78 is a rural four-lane divided highway with a 40' normal width median, 12' paved lanes, 10' outside shoulders with 8' inside shoulders (including 4' paved shoulders). Based upon the GDOT Functional Classification Map, SR 138 and SR 10/US 78 are both Principal Arterials.

Other projects in the area: PI 0015678: SR 10BUS WB to SR 10/US 78 EB. Preliminary Engineering Phase

This project proposes to add a ramp lane to connect W. Spring St/SR 10BUS to SR 10/US 78 addressing safety and operational concerns on SR 10BUS.

PI 0000411: SR 83 Conn from SR 11 to SR 83. Preliminary Engineering Phase (2019)

This project proposes to construct on new location a 4.7-mile connector that would provide a bypass around the historic downtown City of Monroe. The connector would begin at SR 11 approximately 0.5 mile south of the city limits, extend eastward, and terminate at SR 83.

PI 0012674: SR 10BUS @ SR 138/MLK Jr. Blvd (Under Construction)

This project proposed to upgrade equipment, accommodate pedestrians and upgrade pedestrian facilities to meet ADA standards.

MPO: *N/A - not in an MPO* **TIP #:**
Congressional District(s): *District*

Federal Oversight: ☐ **PoDI** ☐ **Exempt** ☒ **State Funded** ☐ **Other**

Projected Traffic: **SR10/US 78:**
24 HR T: 4.50% Current Year (2020): 13,875 VPD
Open Year (2024): 20,275 Design Year (2044): 25,350
SR138/MLK Jr. Blvd.:
24 HR T: 8.50% Current Year (2020): 13,850 VPD
Open Year (2024): 18,250 Design Year (2044): 22,950

Traffic Projections Performed by: Southeastern Engineering, Inc.
Date approved by the GDOT Office of Planning: *1/14/2021*

AASHTO Functional Classification (Mainline): Principal Arterial
AASHTO Context Classification (Mainline): Rural Town
AASHTO Project Type (Mainline): New Construction
Is the project located on a NHS roadway? ☐ No ☒ Yes

Complete Streets - Bicycle, Pedestrian, and/or Transit Standard Warrants:
Warrants met: ☒ None ☐ Bicycle ☐ Pedestrian ☐ Transit

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? ☒ No ☐ Yes

Pavement Evaluation and Recommendations
Initial Pavement Evaluation Summary Report Required? ☒ No ☐ Yes
Feasible Pavement Alternatives: ☐ HMA ☐ PCC ☒ HMA & PCC

Is the project located on a Special Roadway or Network? ☐ No ☒ Yes *Oversize Truck Route*

Do the limits of the project include one or more signalized intersections? ☐ No ☒ Yes

Is Federal Aviation Administration coordination anticipated? ☒ No ☐ Yes
This project is 2.5 miles from the Cy Nunnally Memorial Airport (D73), but does not need additional FAA coordination unless construction equipment exceeds 995' above mean sea level (MSL). Which is appears to be approximately 75'-95' above the ground level in this location.

A note will be added to the construction plans: ANY VERTICAL CONSTRUCTION EQUIPMENT, SUCH AS CRANES, IN EXCESS OF 995 FEET ABOVE MEAN SEA LEVEL (MSL) MUST BE EVALUATED BY THE FAA. EVALUATION BY FILING OF "NOTICE OF PROPOSED CONSTRUCTION" FAA FORM 7460-1 MUST BE ACCOMPLISHED NOT EARLIER THAN 18 MONTHS AND NOT LATER THAN 120 DAYS PRIOR TO CONSTRUCTION.

DESIGN AND STRUCTURAL

The project consists of a new on-ramp of approximately 0.5 mi. connecting SR 138 southbound with SR 10/US 78 westbound, with its beginning/west terminus located at the east end approach slab of the US 78 westbound overpass bridge. Major structures are not anticipated for this project, as the ramp is not expected to impact the existing bridge. The proposed ramp typical section is 16 feet of asphalt pavement (travel way), six feet of inside (right) paved shoulder, eight feet of outside (left) paved shoulder and an additional two-foot width of grassed shoulder along each side. All the typical sections have roadway ditches in "cut" sections. The ramp design speed is 25 MPH transitioning to 55 MPH at its tie-in with US 78. (The ramp design speed proposed is reduced below the GDOT Design Policy minimum in order to maximize the ramp speed transition length along US 78.) The proposed pavement section is flexible asphaltic for the widening along US 78 to the ramp gore, then PCC ramp pavement to SR 138.

Major Structures:

Structure	Existing	Proposed
Existing westbound US 78 bridge over SR 138	The existing two-lane overpass bridge is approximately 216 feet long with 2-foot shoulders; built in 1964.	Impact to the bridge is not proposed.
Wall 1, SR 138	None	Wall to retain new shoulder resulting from road widening, avoiding impact to adjacent development under construction and utilities
Wall 2, Ramp B	None	Wall to retain new shoulder resulting from ramp widening, avoiding impact to adjacent development under construction and utilities

Accelerated Bridge Construction (ABC) techniques anticipated: ☒ No ☐ Yes

Mainline Design Features:

Ramp (P.I. No. 0015421)	**Functional Classification:** *Functional Classification*		
Feature	**Existing**	***Policy**	**Proposed**
Typical Section:			
- Number of Through Lanes	0		1
- **Lane Width(s) (-ft)**	**N/A**	**16'**	**16'**
- **Median Width (-ft) & Type**	**N/A**	**N/A**	**N/A**
- **Shoulder Width (-ft) (Outside)**	**N/A**	**N/A**	**10' total / 2' grass**
- **Border Area Width (-ft)**	**N/A**	**N/A**	**N/A**
- **Cross Slope (%)**	**N/A**	**2%**	**2%**
- **Outside Shoulder Slope (%)**	**N/A**	**2% paved / 6% grass**	**2% paved / 6% grass**
- **Inside Shoulder Width (-ft)**	**N/A**	**N/A**	**8' total / 2' grass**
- **Sidewalks (-ft)**	**N/A**	**N/A**	**N/A**
- Auxiliary Lanes (# LTL, RTL or TWLTL / -ft width)	0		N/A
- **Bike Accommodations**	**N/A**	**N/A**	**N/A**
Posted Speed (MPH)	N/A		25
Design Speed (MPH)	**N/A**	**35**	**25**
Minimum Horizontal Curve Radius (-ft)	**N/A**	**314'**	**140'**
Maximum Superelevation Rate (%)	**N/A**	**8%**	**8%**
Maximum Grade (%)	**N/A**	**7%**	**3%**
Access Control	**N/A**	**Fully Access Control**	**Fully Access Control**
Design Vehicle	N/A		WB-67
Check Vehicle	N/A		OSOW
Pavement Type	N/A		HMA & PCC

**According to current GDOT Design Policy if applicable*

Design Exceptions/Design Variances to FHWA or GDOT Controlling Criteria anticipated:

FHWA or GDOT Controlling Criteria	No	Undetermined	Yes	DE or DV	Approval Date (if applicable)
1. Design Speed	☐	☐	☒	DV	
2. Design Loading Structural Capacity	☐	☐	☐		
3. Stopping Sight Distance	☐	☐	☐		
4. Horizontal Curve Radius	☐	☐	☒	DV	
5. Maximum Grade	☐	☐	☐		
6. Vertical Clearance	☐	☐	☐		
7. Superelevation Rate	☐	☐	☐		
8. Lane Width	☐	☐	☐		
9. Cross Slope	☐	☐	☐		
10. Shoulder Width	☐	☐	☐		

Proposed Design Speed and Horizontal Curve Radius are both less than Design Policy typical values due to the proximity of the existing westbound ramp and SR 10/US 78 pavement; and to provide an adequate entrance acceleration taper while avoiding impact to the westbound SR 10/US 78 bridge.

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	No	Undetermined	Yes	Approval Date (if applicable)
1. Access Control	☒	☐	☐	
2. Shoulder Width	☒	☐	☐	
3. Intersection Sight Distance	☒	☐	☐	
4. Intersection Skew Angle	☒	☐	☐	
5. Tangent Lengths on Reverse Curves	☒	☐	☐	
6. Lateral Offset to Obstruction	☒	☐	☐	
7. Rumble Strips	☒	☐	☐	
8. Safety Edge	☒	☐	☐	
9. Median Usage	☒	☐	☐	
10. Roundabout Illumination Levels	☒	☐	☐	
11. Complete Streets Warrants	☒	☐	☐	
12. ADA Requirements in PROWAG	☒	☐	☐	
13. GDOT Construction Standards	☒	☐	☐	
14. GDOT Drainage Manual	☒	☐	☐	

VE Study anticipated: ☒ No ☐ Yes ☐ Completed: *Date*

Lighting Required: ☒ No ☐ Yes

Off-site Detours Anticipated: ☒ No ☐ Undetermined ☐ Yes

If yes: Roadway type to be closed: ☐ Local Road ☐ State Route

Detour Route selected: ☐ Local Road ☐ State Route

District Concurrence w/Detour Route: ☐ No/Pending ☐ Received *Date*

Transportation Management Plan [TMP] Required: ☒ No ☐ Yes

If Yes: Project classified as: ☐ Non-Significant ☐ Significant

TMP Components Anticipated: ☒ TTC ☐ TO ☐ PI

INTERCHANGES AND INTERSECTIONS

Interchanges/Major Intersections:
PI No. 0015421, SR 138 at SR 10/US 78

Intersection Control Evaluation (ICE) Required: ☐ No ☒ Yes

Roundabout Concept Validation Required: ☒ No ☐ Yes ☐ Completed *Date*

UTILITY AND PROPERTY

Railroad Involvement: N/A

Utility Involvements:
Williams-Transco Natural Gas
MEAG Power - Transmission
Georgia Power Company - Transmission
Walton EMC – Electric
City of Monroe – Water
City of Monroe – Sewer
City of Monroe – Gas
City of Monroe – Power Distribution
City of Monroe – Telecom
City of Social Circle – Natural Gas
ZAYO Fiber

SUE Required: ☐ No ☒ Yes ☐ Undetermined

Public Interest Determination Policy and Procedure recommended: ☒ No ☐ Yes

Right-of-Way (ROW): Existing width: 157 ft. (SR 138, max.) Proposed width: 157 ft. (SR 138, max.)

Required Right-of-Way anticipated: ☐ None ☒ Yes ☐ Undetermined
Easements anticipated: ☐ None ☒ Temporary ☒ Permanent * ☐ Utility ☐ Other
** Permanent easements include the right to place utilities.*

Anticipated total number of impacted parcels:		2
Displacements anticipated:	Businesses:	0
	Residences:	0
	Other:	0
Total Displacements:		0

Location and Design approval: ☐ Not Required ☒ Required

Impacts to USACE property anticipated: ☒ No ☐ Yes ☐ Undetermined

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document: *GEPA ~ None* (State-funded, Special Studies only)

Level of Environmental Analysis:

☒ The environmental considerations noted below are based on preliminary desktop or screening level environmental analysis and are subject to revision after the completion of resource identification, delineation, and agency concurrence.

☐ The environmental considerations noted below are based on the completion of resource identification, delineation, and agency concurrence.

GDOT MS4 Permit Compliance – Is the project located in a GDOT MS4 area? ☒ No ☐ Yes

If yes, is the GDOT MS4 Permit anticipated to apply to all or part of this project? ☐ No ☐ Yes

Is Non-MS4 water quality mitigation anticipated? ☒ No ☐ Yes

Note: The project does not fall within GDOT's MS4 Permit Area but will need to address and meet the Walton County and City of Monroe requirements.

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/Variance/Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☒	☐	
2. Forest Service/NPS	☒	☐	
3. CWA Section 404 Permit	☐	☒	Regional permit anticipated
4. Tennessee Valley Authority Permit	☒	☐	
5. USACE Real Estate Outgrant	☒	☐	
6. Buffer Variance	☐	☒	
7. Coastal Zone Management Coordination	☒	☐	
8. NPDES	☐	☒	
9. FEMA	☒	☐	
10. Cemetery Permit	☒	☐	
11. Other Permits	☒	☐	
12. Other Commitments	☒	☐	
13. Other Coordination	☒	☐	

Is a PAR required? ☒ No ☐ Yes ☐ Completed *Date*

Environmental Comments and Information:

NEPA/GEPA: Section 4(f) Resources are not anticipated to be identified within the Environmental Survey Boundary (ESB) of Project.

Ecology: Consistent with GEPA, identified resources will be delineated and assessed for effects in compliance with Section 404 of the *Clean Water Act*, and Section 7 of the *Endangered Species Act*. It is anticipated that the project may impact identified resources. As required, coordination would occur with the US Army Corps of Engineers, the US Fish and Wildlife Service, and the Georgia Department of Natural Resources to address any permitting, minimization, and mitigation. Field surveys and desktop screening for this project have identified the following environmental concerns: presence of Waters of the US; as well as the potential for protected species habitat within the ESB.

History: Consistent with GEPA, identified resources will be delineated and assessed for effects in compliance with Section 106 of the *National Historic Preservation Act*. It is anticipated that the project will not impact identified resources. The project will be analyzed for noise impacts to historic resources in compliance with Section 106 of the *National Historic Preservation Act*.

Archeology: It is not anticipated that this project will impact any archaeological resources.

Air Quality:

Is the project located in an Ozone Non-attainment area? ☒ No ☐ Yes

Is a Carbon Monoxide hotspot analysis required? ☒ No ☐ Yes

Noise Effects: The project will be analyzed for noise impacts to historic resources in compliance with Section 106 of the National Historic Preservation Act.

Public Involvement: This project is not anticipated to have a high public controversy potential, and a PIOH is not required.

Major stakeholders: The major stakeholders for this project include Walton County and City of Monroe local officials, adjacent property owners/developers and the traveling public.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule None

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Initial Concept Team Meeting: N/A

Concept Team Meeting: July 9, 2020

Other coordination to date: Project schedule review in progress; Design Traffic Forecasts have been approved by GDOT, ICE completed and submitted herewith; environmental resources review in progress; SUE files approved by the SSUE, coordination with District Utilities in progress; design coordination with adjacent commercial development (under construction) in progress.

Project Activity	Party Responsible for Performing Task(s)
Concept Development	Precision Planning, Inc.
Design	Precision Planning, Inc.
Right-of-Way Acquisition	Local Sponsor
Utility Coordination (Preconstruction)	GDOT District One Utilities Office
Utility Relocation (Construction)	Utility Owners
Letting to Contract	GDOT – Construction Bidding Administration Office
Construction Supervision	GDOT – District One Construction Office
Providing Material Pits	Contractor
Providing Detours	Not Required
Environmental Studies, Documents, & Permits	Precision Planning, Inc. / vhb
Environmental Mitigation	GDOT – Environmental Services Office
Construction Inspection & Materials Testing	GDOT – District One Construction & Materials Office

Project Cost Estimate Summary and Funding Responsibilities:						
	PE Activities		ROW	Reimbursable Utilities	CST*	Total Cost
	PE Funding	Section 404 Mitigation				
Date of Estimate:	03/27/2020	N/A	3/01/21	11/02/20	3/01/21	
Funded By:	Local	Local	Local	Local	HB170 & Local	
Programmed Cost:	$634,868		$74,000	$0	$1,390,000	$2,098,868
Estimated Cost:	$634,868	$75,000	$74,000	$12,000	$3,000,202	$3,796,070
Total Cost Difference:	$0	$75,000	$0	$12,000	$1,610,202	$1,697,202

*CST Cost includes: Construction, Engineering and Inspection, Contingencies and Liquid AC Cost Adjustment.

ALTERNATIVES DISCUSSION

Alternative selection:

Three alternative ramp configurations were originally laid out and evaluated to provide access from SR 138 to westbound SR 10/US 78. Alternative 1 was a 4,100-foot extension of the existing westbound off-ramp from its signalized intersection with SR 138, accommodating north and southbound SR 138 traffic and met a 45-MPH design speed, matching SR 138. The alignment would cross the Williams-Transco (WT) pipelines, environmentally sensitive areas (ESAs) and require approximately 22 acres of right of way. The second alternative considered was a loop ramp inside existing GDOT right of way on the east side of SR 138 accommodating north and southbound SR 138 traffic with proposed turn lanes in each direction, requiring also at least a signal modification. To provide the required minimum horizontal curve and design speed, according to GDOT Design Policy (GDP), the alignment, particularly the entrance taper length, would require the widening of the existing westbound SR 10/US 78 bridge. Even though right of way, utility and environmental impacts from this alternative would have been considerably less than the other alternatives evaluated, its cost, due primarily to the bridge widening, was the reason it was not pursued. The third alternative studied was a 3,300-foot slip ramp connecting southbound SR 138 to westbound SR 10/US 78. Northbound SR 138 access was not to be provided, but the signal was not to be impacted. This alignment would impact ESAs and cross the WT Pipeline easement twice. During the concept phase and early SUE process with coordination with WT Pipeline, it was reported by WT Pipeline that the cost impacts to its utility would be approximately $5,000,000. Due to this cost, Alternative 3 did not progress further in design. To proceed with the project, Alternative 2 was reevaluated and the alignment revised to accommodate an adequate entrance taper but avoid impact to the bridge. With this configuration, however, the required horizontal curve and corresponding design speed of 25 MPH meets AASHTO ramp requirements but falls below the typical GDP criteria. With minimal ESAs, utilities and adjacent properties impacted, along with a lower overall projected cost, this alternate was selected. Finally, a “No-build” alternative was also included in the evaluation, but would not meet the goals of the stakeholders in providing needed access westbound at this location, and was therefore rejected.

Preferred Alternative: Alternative 2 is the proposed base design: Add loop on-ramp of approximate length of 2,600 linear feet from SR 10/US 78 westbound to SR 138/MLK Jr. Blvd southbound.			
Estimated Property Impacts:	2	**Estimated Total Cost:**	$3,796,070
Estimated ROW Cost:	*$74,000	**Estimated CST Time:**	22 months
Rationale: The Design Speed for this alternative is 25 MPH and connects to SR 138 adjacent to the south side of the existing westbound off-ramp, requiring a signal modification and likely a concrete barrier separating the two ramps. The speed design is reduced below GDOT Design Policy typical speed in order to maximize the entrance taper length at SR 10/US 78, tying into the existing westbound lane east of the existing overpass bridge. In addition, the sharper horizontal curvature proposed, resulting in the lower design speed, is due to the proximity of the existing ramp and SR 10/US 78. This preferred alignment would require much less R/W than either of the other two alternatives, and cost significantly less than either of the other two alternates.			

Alternative 1: Alternative 1 adds an on-ramp from SR 138/MLK Jr. Blvd. to SR 10/US 78 westbound with a length of approximately 4,100 linear feet.			
Estimated Property Impacts:	2	**Estimated Total Cost:**	$4,933,756
Estimated ROW Cost:	*$914,300	**Estimated CST Time:**	24 months
Rationale: Alternative 1 has a length of approximately 4,100 linear feet with termini approximately 5,000 feet west of the SR 10/US 78 overpass bridge and the existing signalized off-ramp intersection with SR 138/MLK Jr. Blvd. Design Speed for this alternative is 45 MPH. The configuration of this alternate would require a signal modification. This alignment would also require over five times more R/W than the other two alternates combined, would impact significantly more environmentally sensitive areas, more area over Williams-Transco pipelines and would likely take up to six months longer to construct due to its length and impacts.			

Alternative 3: Alternative 3 adds an on-ramp of approximate length of 3,300 linear feet from SR 138/MLK Jr. Blvd southbound to SR 10/US 78 westbound.			
Estimated Property Impacts:	2	**Estimated Total Cost:**	$8,833,822
Estimated ROW Cost:	*$187,000	**Estimated CST Time:**	18 months
Rationale: Alternative 3 (slip ramp) has a length of approximately 3,300 linear feet with termini approximately 1,900 feet west of the SR 10/US 78 overpass bridge and approximately 620 feet north of the existing ramp signal. The Design Speed for this alternative is 45 MPH. The required R/W for this alternative is approximately 4.0 acres. The major cost addition to this alternate is the estimated utility cost of $5,000,000, most of which is attributed to impacts to the Williams-Transco Pipeline facility, where two crossings of its easement would occur.			

**Estimated ROW cost by design team.*

No-Build Alternative: Direct access from SR 138/MLK Jr. Blvd to US 78/SR 10 westbound is not provided.			
Estimated Property Impacts:	0	**Estimated Total Cost:**	$0
Estimated ROW Cost:	$0	**Estimated CST Time:**	N/A
Rationale: The no-build alternative does not meet the improvement goals of this project, which is to provide direct access from SR 138 to US 78/SR 10 westbound. This traffic movement does not currently exist at this interchange.			

Comments: Originally, Alternative 2 Loop Ramp configuration followed typical design criteria according to GDOT Design Policy (GDP); but to do so would require widening of the existing bridge, resulting in an unfeasible improvement due to cost. Similarly, a ramp fly-over alternative was briefly considered to maintain typical GDP criteria and avoid impact to the existing bridge, but due to impacts to the commercial development (under construction) and projected new bridge costs, it was also rejected. No cost or schedule estimates were prepared for these alternatives.

LIST OF ATTACHMENTS/SUPPORTING DATA

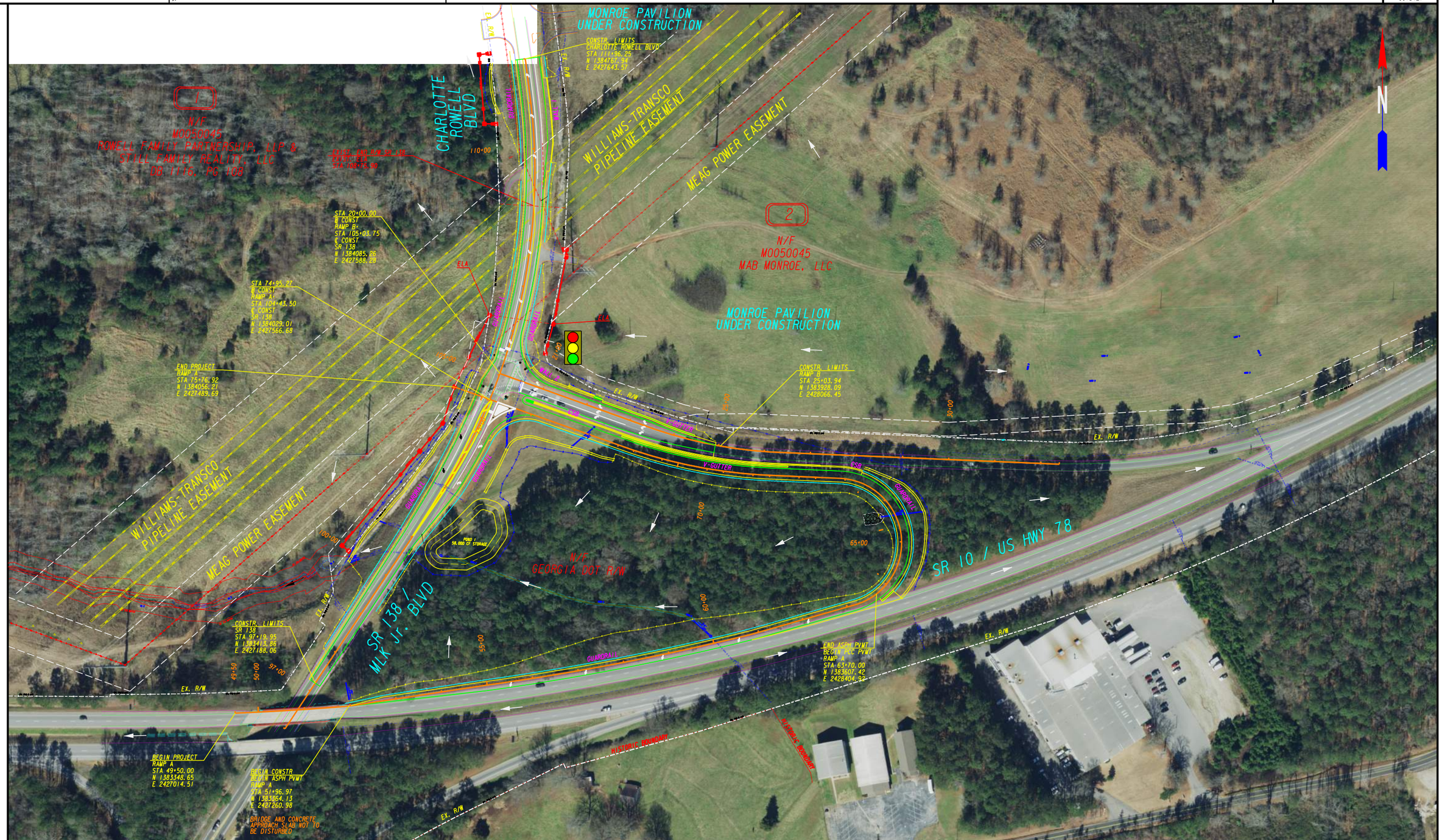
1. Concept Layout - Alternative 2-Revised-Preferred Alternative
2. Typical sections
3. Concept profile
4. Concept Layout - Alternative 1
5. Concept Layout - Alternative 2A
6. Concept Layout - Alternative 3
7. Detailed Cost Estimates:
    a. CST Cost Estimate (AASHTOWare Project Cost Estimate)
    b. Revisions to Programmed Costs forms, & Liquid AC Cost Adjustment forms
    c. Revised Preliminary Right-of-Way Cost Estimate Summary
    d. Revised Estimated Mitigation Cost for Concept Report (GDOT E-mail)
    e. Revised Utility Cost Estimate (Concept)
8. Revised Utility Concept Report
9. Crash Summary and Diagram
10. Approved Design Traffic Forecasts Memorandum
11. Intersection Control Evaluation (ICE), with approved Design Traffic Flow Diagrams
12. Minutes of Meetings (Concept and Progress Meetings)

APPROVALS

Concur: Hiral Patel — Director of Engineering — 5-19-2021 — Date

Approve: Meg B. Pirkle — Chief Engineer — 5/19/2021 — Date

3/2/2021 2:58:49 PM 397WA	GPLOT-V8 gplotborder-V8i-PO-color.tbl	0015421 CONCEPT ALT 2 LOOP.dgn	GDOT	P.I. No. 0015421



		PRECISION Planning Inc. planners • engineers • architects • surveyors 400 Pike Boulevard, Lawrenceville, Ga 30046 770.338.8000 • www.ppl.us	SCALE IN FEET 0 100 200 400	REVISION DATES

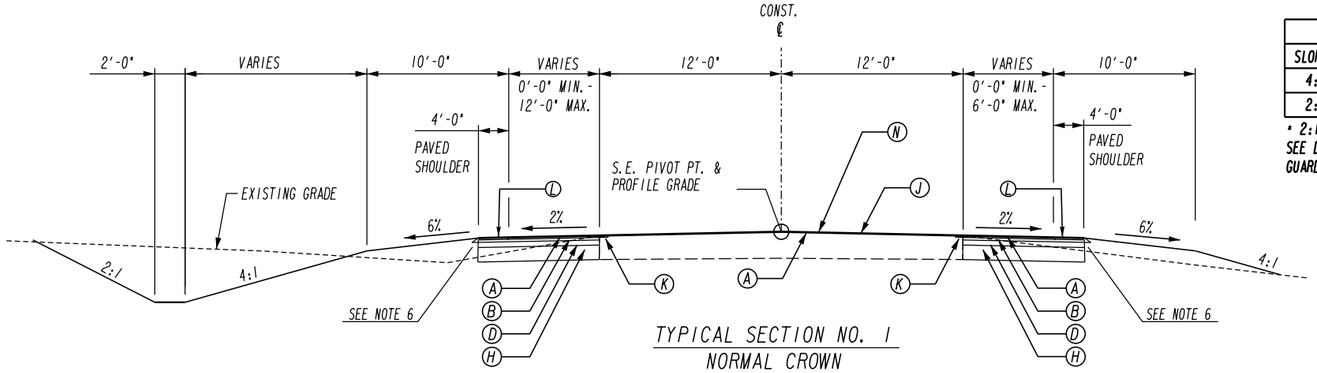
CONCEPT PLAN

P.I. 0015421

RAMP ALTERNATIVE 2 REV.

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		CP-2R
CORRECTED:		DATE:		
VERIFIED:		DATE:		

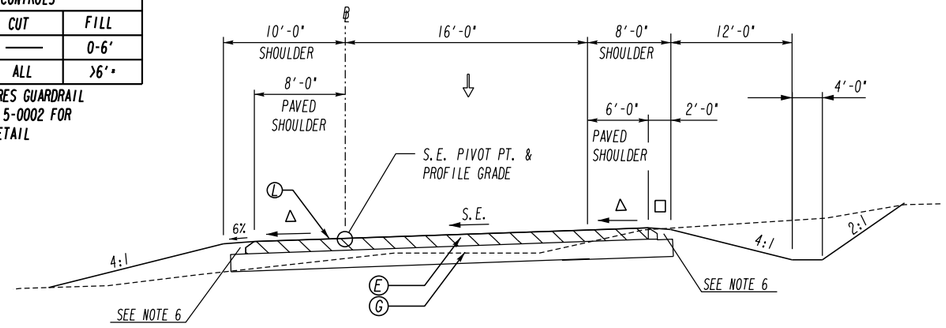
10/23/2015 GPLN



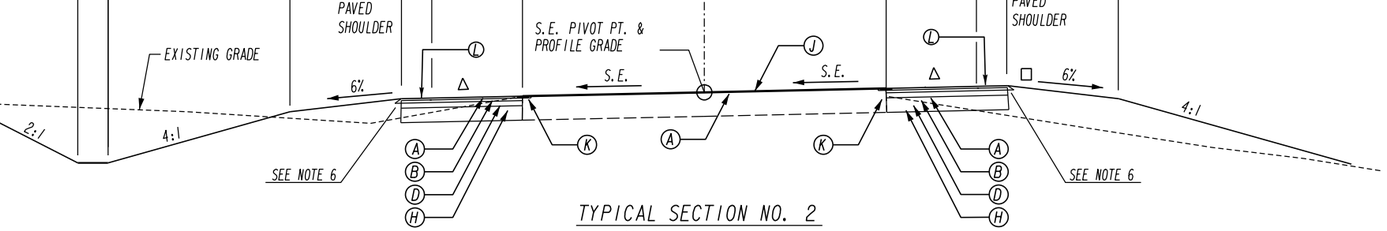
TYPICAL SECTION NO. 1
NORMAL CROWN
SR 138
STA TO STA
STA TO STA (MILLING & INLAY)
STA TO STA (MILLING & INLAY)

SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	——	0-6'
2:1	ALL	>6'*

* 2:1 REQUIRES GUARDRAIL SEE DRAWING 5-0002 FOR GUARDRAIL DETAIL



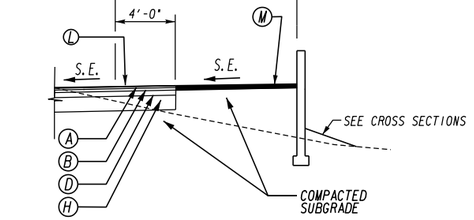
TYPICAL SECTION NO. 4
RAMP A
STA 63+30.68 TO STA 66+90.90



TYPICAL SECTION NO. 2
SUPERELEVATED
SR 138
STA TO STA

△ SLOPE MATCHES S.E. OF TRAVEL WAY

□ ALGEBRAIC DIFFERENCE IN PAVING AND SHOULDER NOT TO EXCEED 8%



TYPICAL SECTION NO. 3
SR 138

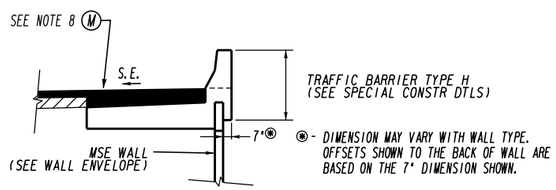
CONC. SIDE BARRIER WALL: STA TO STA RT
MSE WALL: STA TO STA RT

REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY INCL BITUM MATL & H LIME-165 LB/SY.
- (B) RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-220 LB/SY.
- (C) RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-440 LB/SY.
- (D) RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-660 LB/SY.
- (E) 8.0 INCH PORTLAND CEMENT CONCRETE, CL 1
- (F) GR AGGR BASE CRS, 4 INCH, INCL MATL
- (G) GR AGGR BASE CRS, 8 INCH, INCL MATL
- (H) GR AGGR BASE CRSE, 12 INCH, INCL MATL
- (J) ASPHALTIC CONCRETE LEVELING, INCL MATL & H LIME
- (K) PVMT REINF FABRIC STRIPS, TP2, 18 INCH WIDTH
- (L) SKIP SHOULDER RUMBLE STRIP (SEE DETAILS T-23B AND T-25)
- (M) 6" CONC SLOPE PAVING
- (N) MILLING & INLAY, VAR. DEPTH

GENERAL NOTES

1. SEE CROSS SECTIONS AND PLANS FOR DITCH LOCATIONS AND ELEVATIONS.
2. SEE ROADWAY PLANS FOR SUPERELEVATION RATES AND TRANSITIONS.
3. FOR METHOD OF SUPERELEVATION SEE CONSTR PLAN & PROFILE SHEETS-CURVE DATA, LOCATIONS OF NORMAL CROWN & FULL S.E. NOTED ON CONSTR. CENTERLINE.
4. SEE CROSS SECTIONS FOR SLOPES DIFFERENT THAN TYPICAL.
5. SAW-CUT AND REMOVE EXISTING PAVED SHOULDER AND REPLACE WITH FULL DEPTH IN AREAS OF WIDENING UNLESS OTHERWISE NOTED.
6. ALL PROPOSED PAVING SHALL CONFORM TO GDOT DETAIL P-7
7. FOR SHOULDER RUMBLE STRIPS, SEE GDOT DETAILS T-23B & T-25.
8. GAP BETWEEN BOTTOM OF 6" SLOPE PAVING AND TOP OF WALL FOOTING OR TOP OF WALL COPING SHALL BE FILLED WITH ADD'L SLOPE PAVING; ADD'L QUANTITY IS INCLUDED IN TOTAL QUANTITY FOR 6" SLOPE PAVING.
9. SEE PLANS FOR V-GUTTER.



SECTION AT MSE WALL
TRAFFIC BARRIER H COPING
WITH S-TYPE BARRIER

NOT TO SCALE

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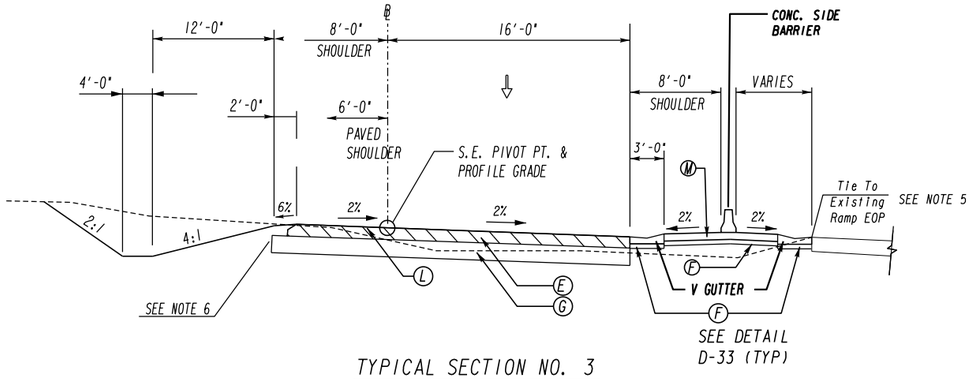
REVISION DATES

TYPICAL SECTIONS
SR 138 AT SR 10/US 78

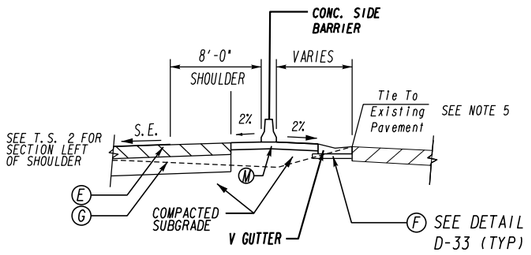
CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		05-0001
CORRECTED:		DATE:		
VERIFIED:		DATE:		

7/31/2015 GPLN



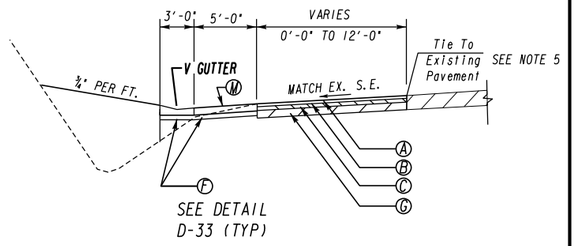
TYPICAL SECTION NO. 3
RAMP A

STA 67+85.00 TO STA 71+40.00



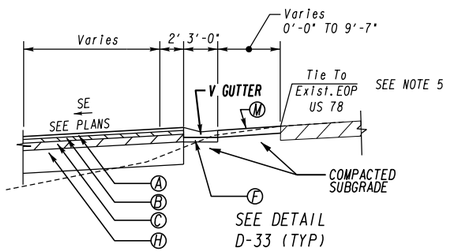
TYPICAL SECTION NO. 3B
RAMP A

STA 66+90.90 TO STA 67+85.00



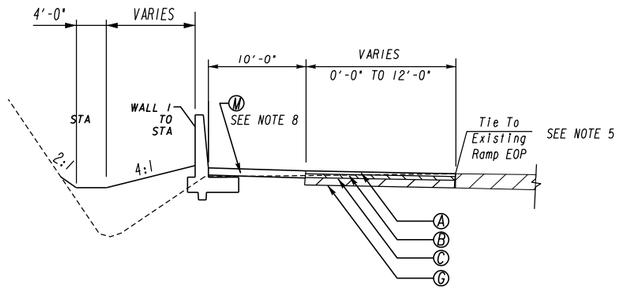
TYPICAL SECTION NO. 6
RAMP B WIDENING

STA TO STA



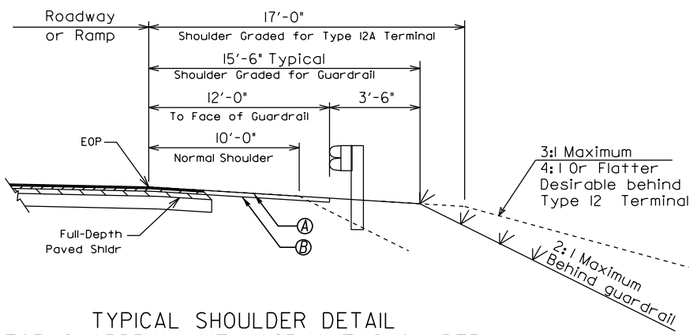
TYPICAL SECTION NO. 4
RAMP A

STA 62+97.51 TO STA 63+30.68



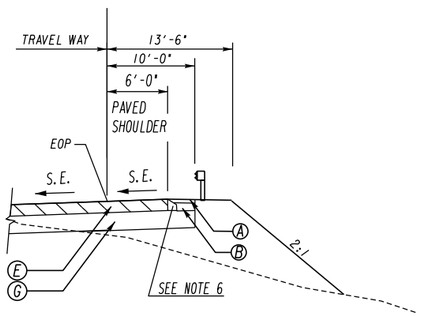
TYPICAL SECTION NO. 5
RAMP B WIDENING

STA TO STA



TYPICAL SHOULDER DETAIL FOR GUARDRAIL WITH ASPHALT SHOULDER

SR 138 STA. TO STA. , LT
SR 138 STA. TO STA. , RT
RAMP A STA. 51+92.72 TO STA. 60+79.34, LT



RAMP A (GUARDRAIL)
STA 64+08.53 TO STA 66+79.00, RT

NOTES:
1. SEE PLAN FOR GUARDRAIL LOCATIONS.
2. SEE CONST. DTL S-4.

REQUIRED PAVEMENT

- (A) RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY INCL BITUM MATL & H LIME-165 LB/SY.
- (B) RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-220 LB/SY.
- (C) RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-440 LB/SY.
- (D) RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME-660 LB/SY.
- (E) 8.0 INCH PORTLAND CEMENT CONCRETE, CL 1
- (F) GR AGGR BASE CRS, 4 INCH, INCL MATL
- (G) GR AGGR BASE CRS, 8 INCH, INCL MATL
- (H) GR AGGR BASE CRSE, 12 INCH, INCL MATL
- (J) ASPHALTIC CONCRETE LEVELING, INCL MATL & H LIME
- (K) PVMT REINF FABRIC STRIPS, TP2, 18 INCH WIDTH
- (L) SKIP SHOULDER RUMBLE STRIP (SEE DETAILS T-23B AND T-25)
- (M) 6" CONC SLOPE PAVING
- (N) MILLING & INLAY, VAR. DEPTH

GENERAL NOTES

1. SEE CROSS SECTIONS AND PLANS FOR DITCH LOCATIONS AND ELEVATIONS.
2. SEE ROADWAY PLANS FOR SUPERELEVATION RATES AND TRANSITIONS.
3. FOR METHOD OF SUPERELEVATION SEE CONSTR PLAN & PROFILE SHEETS-CURVE DATA, LOCATIONS OF NORMAL CROWN & FULL S.E. NOTED ON CONSTR. CENTERLINE.
4. SEE CROSS SECTIONS FOR SLOPES DIFFERENT THAN TYPICAL.
5. SAW-CUT AND REMOVE EXISTING PAVED SHOULDER AND REPLACE WITH FULL DEPTH PVMT IN AREAS OF WIDENING UNLESS OTHERWISE NOTED.
6. ALL PROPOSED PAVING SHALL CONFORM TO GDOT DETAIL P-7
7. FOR SHOULDER RUMBLE STRIPS, SEE GDOT DETAILS T-23B & T-25.
8. GAP BETWEEN BOTTOM OF 6" SLOPE PAVING AND TOP OF WALL FOOTING OR TOP OF WALL COPING SHALL BE FILLED WITH ADD'L SLOPE PAVING; ADD'L QUANTITY IS INCLUDED IN TOTAL QUANTITY FOR 6" SLOPE PAVING.
9. SEE PLANS FOR V-GUTTER.

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REVISION DATES

TYPICAL SECTIONS
SR 138 AT SR 10/US 78

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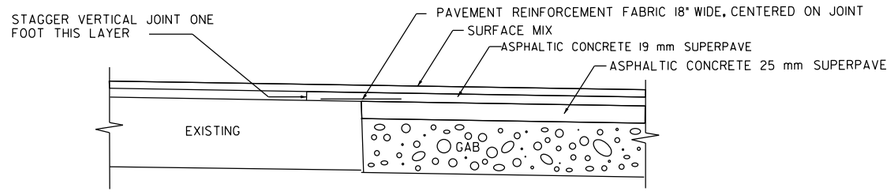
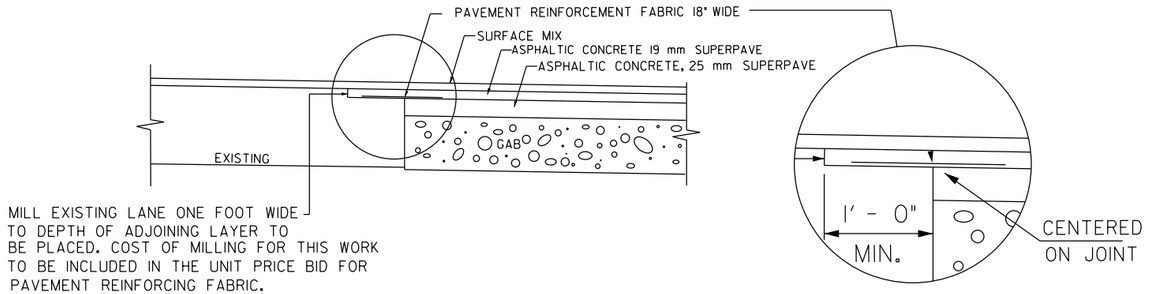
CORRECTED:		DATE:		
VERIFIED:		DATE:		

TYPICAL SECTION DETAIL TO BE USED WHEN EXISTING PAVEMENT IS TO BE RESURFACED WITH TWO INCHES OR MORE OF ASPHALTIC CONCRETE



TYPICAL SECTION DETAIL TO BE USED WHEN EXISTING PAVEMENT IS TO BE RESURFACED WITH LESS THAN TWO INCHES OF ASPHALTIC CONCRETE



ALLOWABLE RANGES TABLE

FOR THIS PROJECT, CROSS SLOPES THAT ARE ADJUSTED TO "BEST FIT" EXISTING PAVEMENT SLOPES ARE SUBJECT TO THE FOLLOWING LIMITS:

A. *NORMAL CROWN*

SECTION WITH GRADES 0.5% OR GREATER	SECTION WITH GRADES LESS THAN 0.5%
0.0150 FT/FT - MINIMUM	0.0156 FT/FT - MINIMUM
0.0208 FT/FT - DESIRABLE	0.0208 FT/FT - DESIRABLE
0.0250 FT/FT - MAXIMUM	0.0300 FT/FT - MAXIMUM

B. *SUPERELEVATION RATE*

S.E. RATE SHOWN ON PLANS OR SE RATE EXISTING IN FIELD, WHICHEVER IS GREATER.

C. *SUPERELEVATION TRANSITION LENGTH (LENGTH FROM FLAT POINT TO FULL SE)*

	RATE OF CHANGE	CORRESPONDING DIFFERENCE IN GRADE BETWEEN PIVOT POINT AND EDGE OF PAVEMENT
MINIMUM	1:150	0.67%
DESIRABLE	1:200	0.50%
MAXIMUM	1:300	0.33%

LENGTH SHALL BE SET TO AVOID CREATING A FLAT GUTTER GRADE ON LOW SIDE AND TO AVOID FLAT CROSS SLOPES AT OR NEAR THE LOW POINT OF VERTICAL CURVES.

D. *POSITIONING OF SUPERELEVATION TRANSITION LENGTH ON SIMPLE CURVES*

50% OF TRANSITION INSIDE CURVE - MAXIMUM
33% OF TRANSITION INSIDE CURVE - DESIRABLE
20% OF TRANSITION INSIDE CURVE - MINIMUM

NOTE: CROWN WIPE-OUT SHALL BE AT THE SAME RATE AS THE SE TRANSITION.

E. *SMOOTHING OF BREAKS IN EDGE PROFILE AT BEGIN AND END OF TRANSITION SHALL BE ACCOMPLISHED BY VERTICAL CURVE WITH A MINIMUM LENGTH (IN FEET) EQUAL TO THE SPEED DESIGN (IN MPH).*

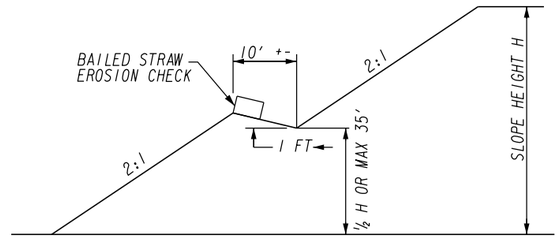
REMOVAL DETAIL
N.T.S.

STATION TO STATION	LOCATION
STA 64+50± TO STA 70+50±	LEFT, CENTER & RIGHT (RAMP A)

NOTES:

1. DETAIL APPLIES TO THE STATION RANGE ABOVE.

2. AFTER EXCAVATION IN THIS AREA IS COMPLETE, 24 INCHES OF SUBGRADE SOILS BENEATH THE PAVEMENT AND SHOULDERS SHALL BE REMOVED AND EITHER DRIED OUT AND RE-COMPACTED, OR REPLACED WITH SUITABLE SOILS. THIS WORK SHALL BE DONE AT THE DIRECTION OF THE ENGINEER.



BERM DETAIL
CUTS OR FILLS OVER 35 FEET

NOTES:
1. FOR SLOPE HEIGHTS LESS THAN 70 FT. BUT GREATER THAN 35 FT., A BERM SHOULD BE CONSTRUCTED AT APPROX. ½ THE SLOPE HEIGHT. FOR SLOPE HEIGHTS GREATER THAN 70 FT., CONSTRUCT A BERM EVERY 35 FT.

2. THE BERM SHOULD BE SLOPED TO DRAIN AND SHOULD BE CONNECTED TO CONCRETE FLUMES TO REMOVE WATER FROM SLOPE.

3. A DRAINAGE DITCH SHOULD BE CONSTRUCTED AT THE TOP OF CUT SLOPES WHERE WATER DRAINS TOWARDS SLOPE.

NOTE: SEE DETAIL S-7 FOR THE CONSTRUCTION OF BENCHED AND/OR SERRATED SLOPES.

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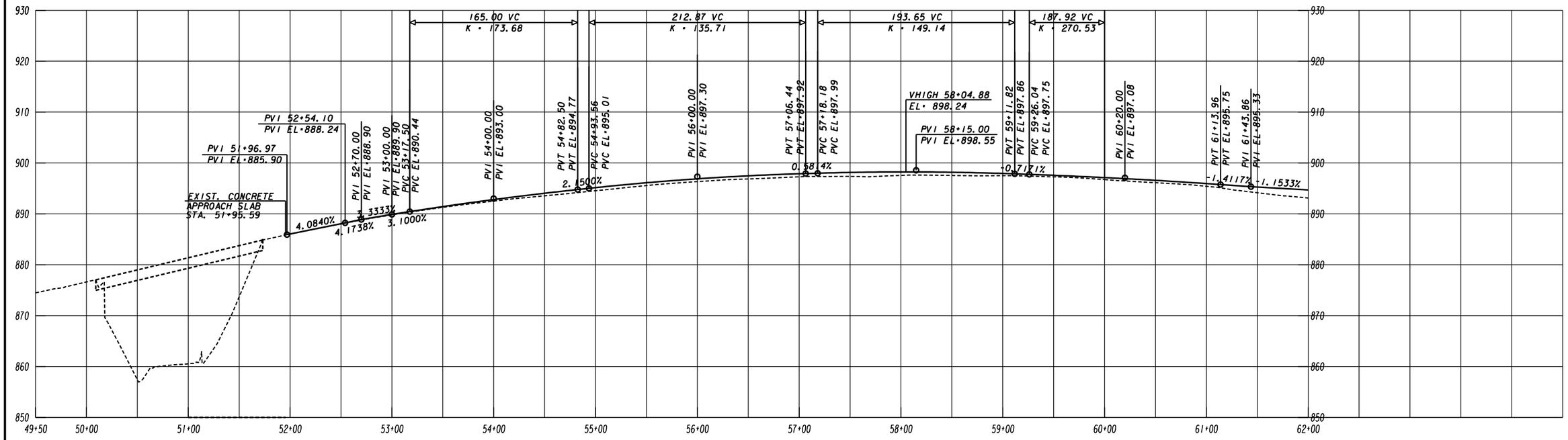
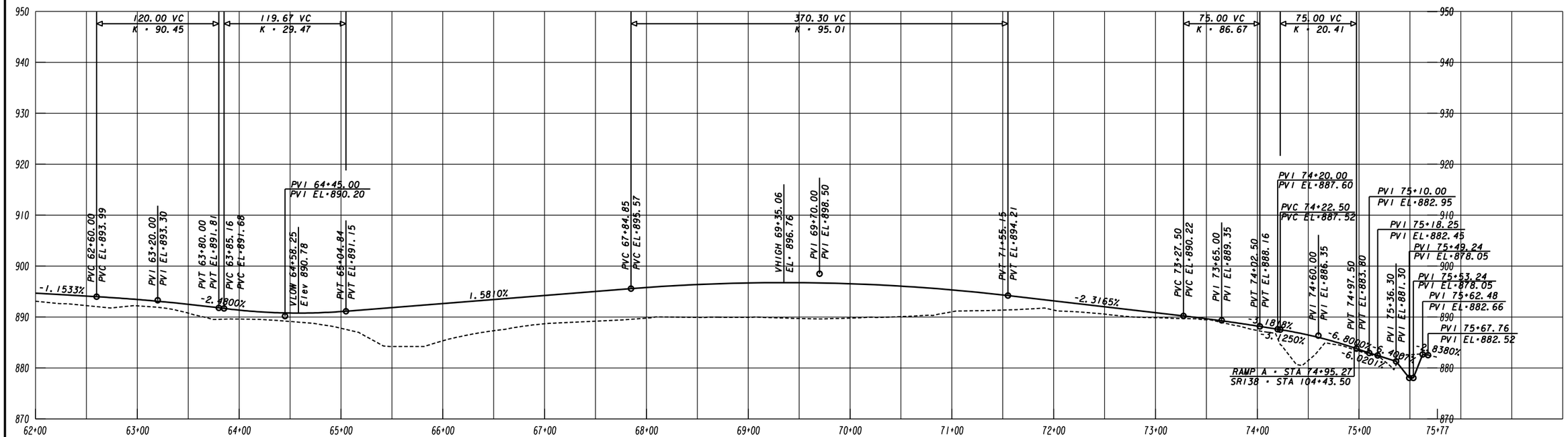
REVISION DATES

TYPICAL SECTIONS
SR 138 AT SR 10/US 78

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		05-0003
CORRECTED:		DATE:		
VERIFIED:		DATE:		





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SCALE: 1"=50' H.
1"=10' V.

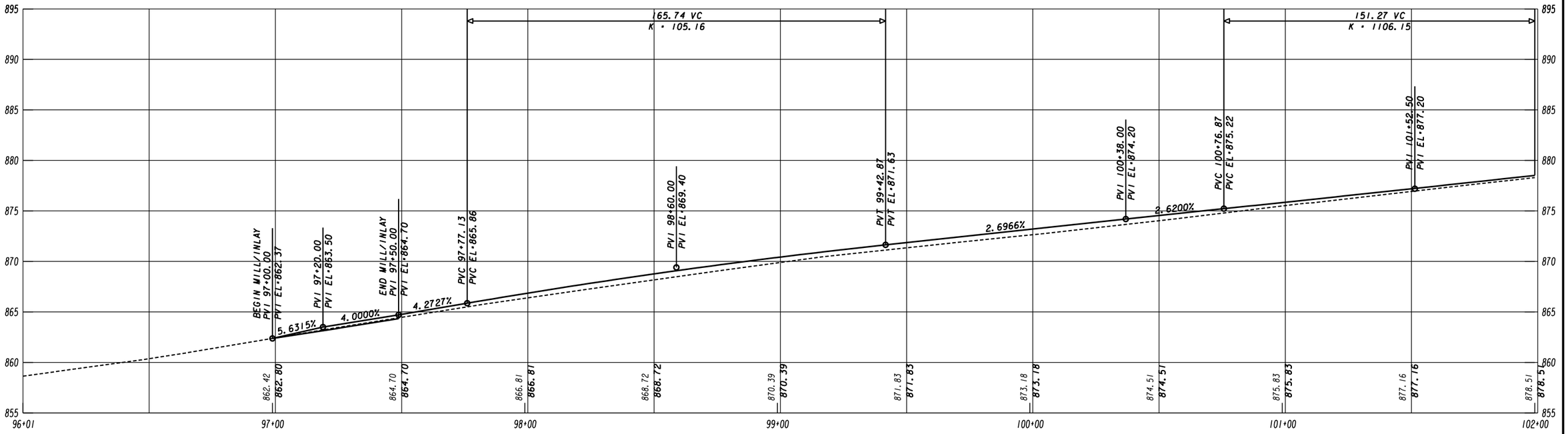
REVISION DATES

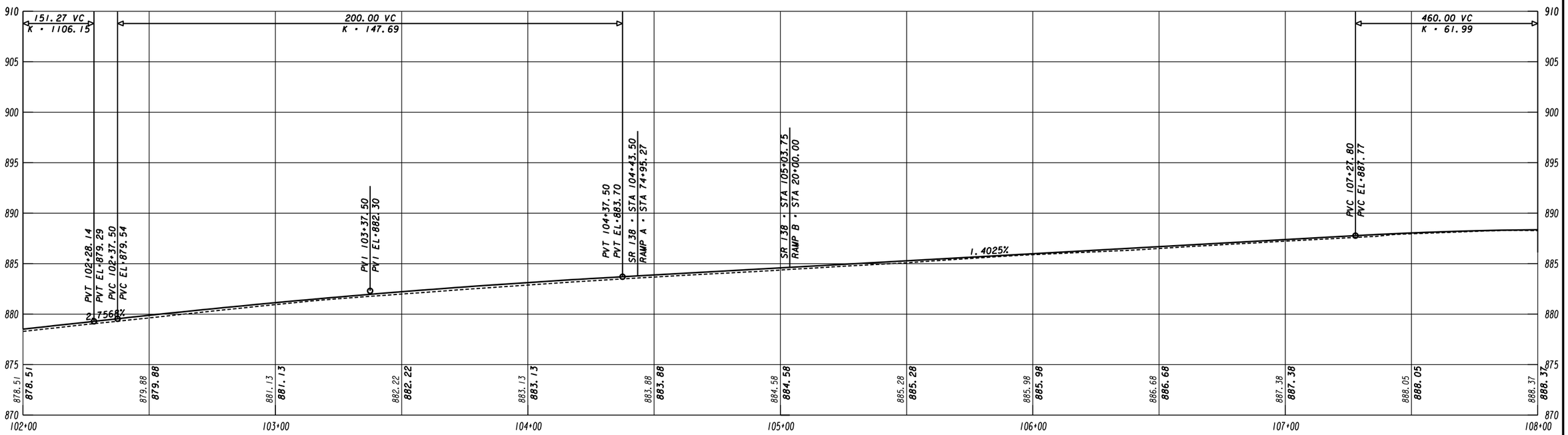
MAINLINE PROFILE

RAMP A

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		15-0001
CORRECTED:		DATE:		
VERIFIED:		DATE:		

7/31/2015 GR2EDG





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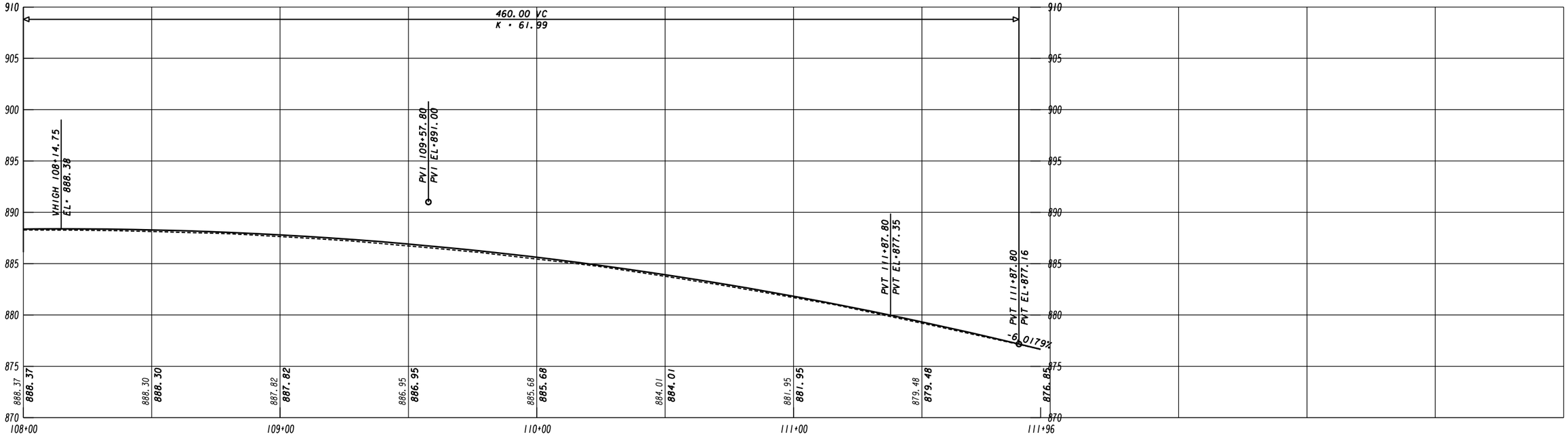
SCALE: 1"=20' H.
1"=5' V.

REVISION DATES

CROSSROAD PROFILE
SR 138 WIDENING

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		16-0001
CORRECTED:		DATE:		
VERIFIED:		DATE:		



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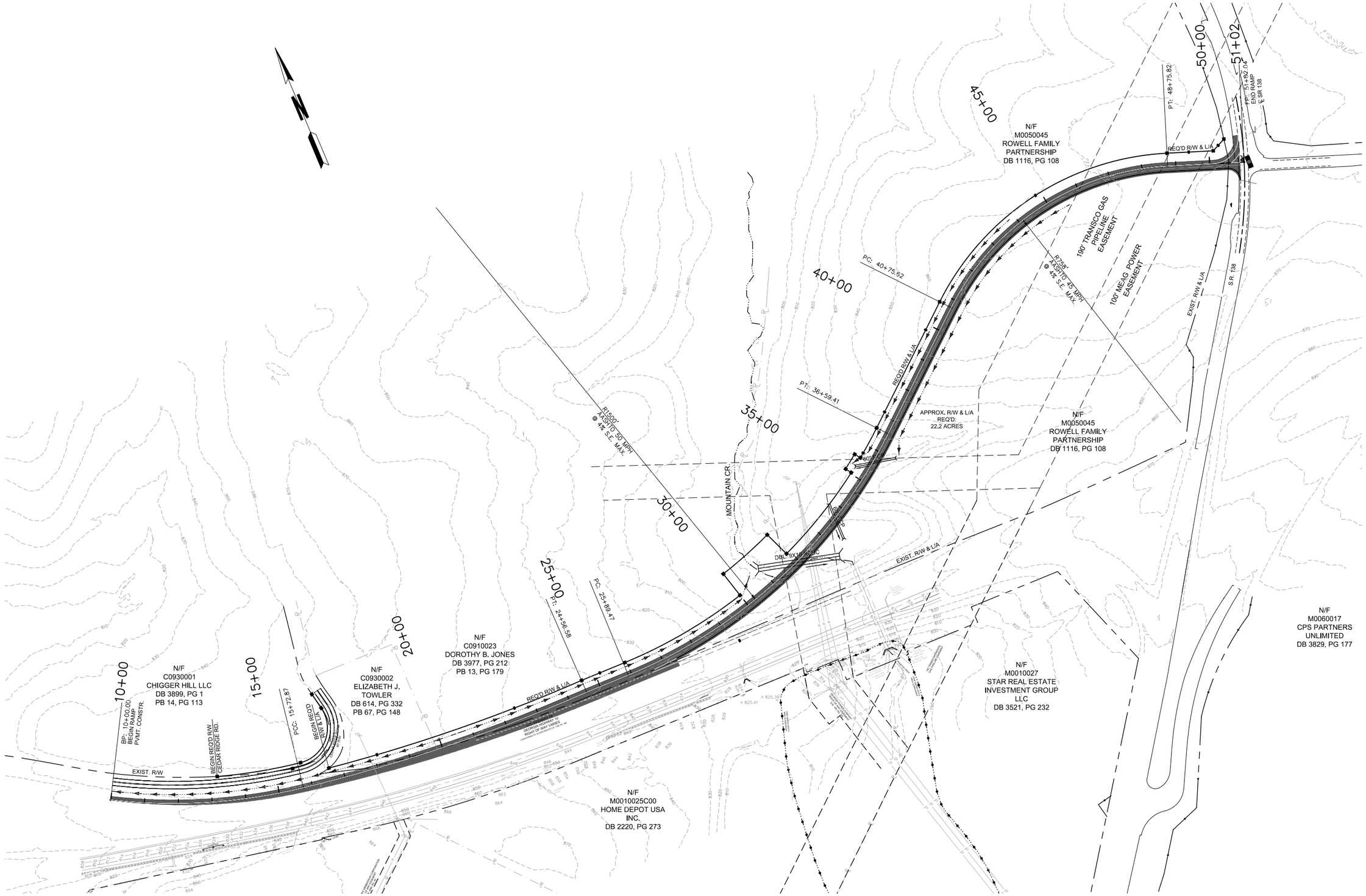
SCALE: 1"=20' H.
1"=5' V.

REVISION DATES

CROSSROAD PROFILE
SR 138 WIDENING

CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No. 16-0002



PLOT DATE: 6/19/2019 10:27 AM FILE PATH: E:\SDSKPROJ\03170-CRB-US78 WB RAMP\DWG\03170_CONCEPT -CRB TO 78 WB RAMP_CONCEPT1.DWG -- SHANNON JACOBSEN

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MAB American Management, LLC
Walton County
SR 138 TO US 78 WESTBOUND ON-RAMP

CONCEPT SKETCH

Land lot:	District:	Date:	6/19/19
County: WALTON			CP-1
Drawn By:	Field By:		
Checked By:			
Job #: T19-268	Scale: 1"=100'		

N/F
M0050045
ROWELL FAMILY
PARTNERSHIP
DB 1116, PG 108

N/F
M0050045
ROWELL FAMILY
PARTNERSHIP
DB 1116, PG 108

SIGNAL
MODIFICATION

CONC. SIDE
BARRIER

100' TRANSCO GAS
PIPELINE
EASEMENT

100' MEAG POWER
EASEMENT

R251'
ASSHTO 30 MPH
@ 4% S.E. MAX

END RAMP
TIE TO EXIST.

BRIDGE
WIDENING

N/F
M0060006
SADIE D THORNTON
DB 168, PG 627
P.B. 28, PG 33

MOUNTAIN CR

BEGIN RAMP
TIE TO EXIST.

N/F
C0910023
DOROTHY B. JONES
DB 3977, PG 212
PB 13, PG 179

N/F
M0010027
SEAR REAL ESTATE
INVESTMENT GROUP
LLC
DB 3524, PG 232

N/F
M0060017
CPS PARTNERS
UNLIMITED
DB 3829, PG 177

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

PLOT DATE: 7/8/2019 11:41 AM FILE PATH: E:\SDSKPROJ\03170-CRB-US78 WB RAMP\DWG\03170_CONCEPT -CRB TO 78 WB RAMP_CONCEPT 2B.DWG - MIKE ALLGOOD

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MAB American Management, LLC
Walton County

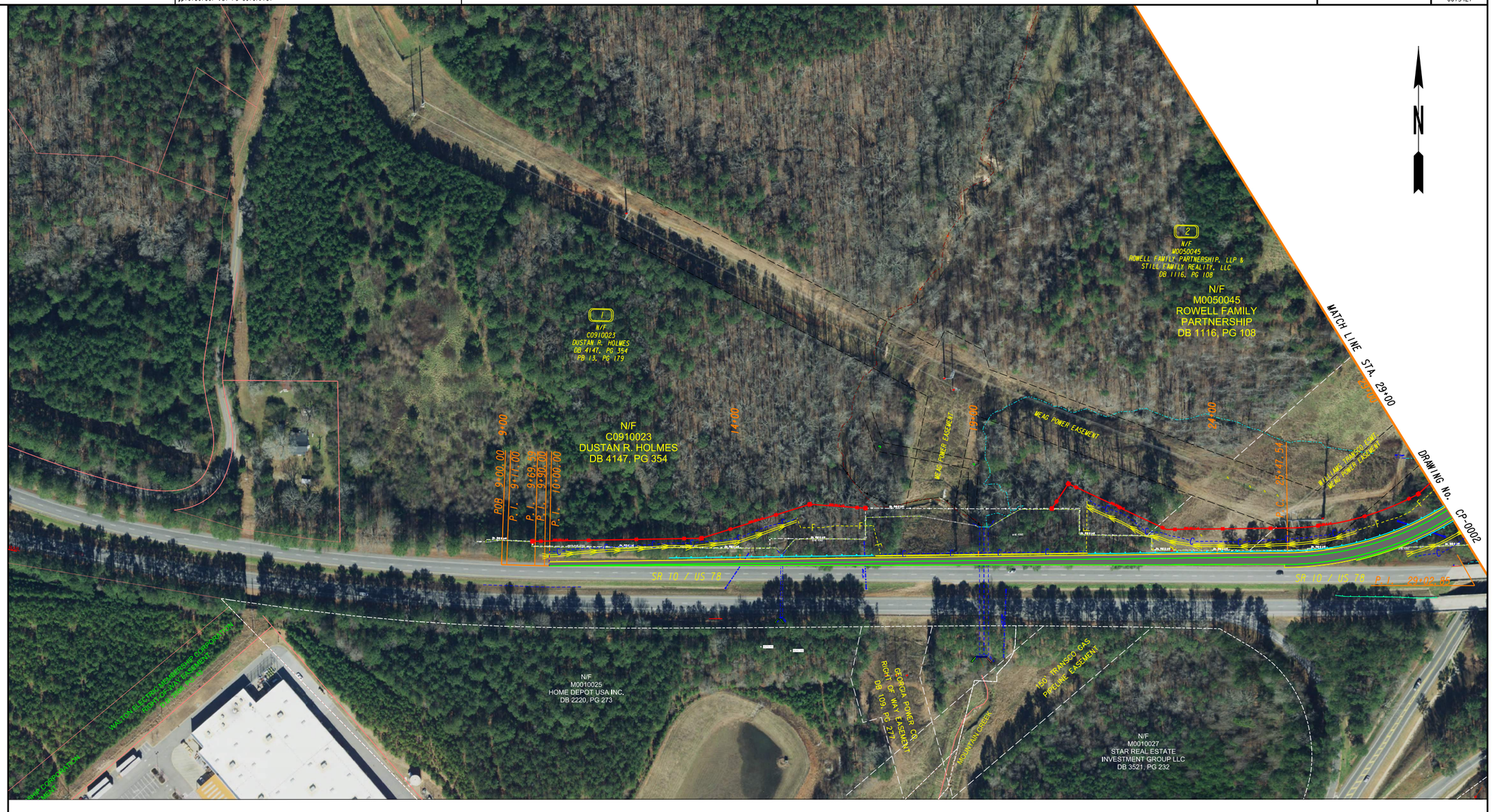
SR 138 TO US 78 WESTBOUND ON-RAMP

CONCEPT SKETCH

Land lot:	District:	Date:	6/28/19
County: WALTON			
Drawn By:	Field By:		
Checked By:			
Job #: T19-268	Scale: 1"=100'		

CP-2

7/13/2020 8:19:24 AM 39TWA	GPLOT-V8 gplotborder-V8I-PD-color.tbl	CONCEPT 3 sheet 1.dgn	GDOT	P.I. No. 0015421



		PRECISION Planning Inc. planners • engineers • architects • surveyors 400 Pike Boulevard, Lawrenceville, Ga 30046 770.338.8000 • www.ppi.us	SCALE IN FEET 0 100 200 400

REVISION DATES		

CONCEPT SKETCH

CONCEPT ALTERNATIVE 3

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		CP-0001
CORRECTED:		DATE:		
VERIFIED:		DATE:		

10/23/2015 GPLN

7/13/2020 8:20:35 AM
397MA

GPLOT-V8
gplotborder-V8i-PO-color.tbl

CONCEPT 3 sheet 2.dgn

GDOT

P.I. No. 0015421

MATCH LINE STA. 29+00 DRAWING No. CP-0001

N

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SCALE IN FEET
0 100 200 400

REVISION DATES

CONCEPT SKETCH
CONCEPT ALTERNATIVE 3

CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No.
CP-0002

10/23/2015 GPLN

Georgia Department of Transportation

Interoffice Memo

FILE

PI NUMBER	0015421	PROJECT DESCRIPTION	SR 138 @ SR 10/US 78 (Walton County)
OFFICE	Office of Program Delivery		
DATE	Monday, March 1, 2021		

From: Kimberly Jane Kimbrough

To: Erik Rohde, P.E., State Project Review Engineer
via email Mailbox: CostEstimatesandUpdates@dot.ga.gov

Subject: **REVISIONS TO PROGRAMMED COSTS**

Project Manager:	Kimberly Jane Kimbrough
Management Let Date:	
Management Right of Way Date:	

Cost Estimate Review Iteration

Date of Submittal #1	
Date of Submittal #2	
Date of Submittal #3	

Summary of Programmed Costs and Proposed Revised Costs:

Estimate Type	Cost Estimate Amounts (T-Pro Without Inflation)	Last Estimate Date	Revised Cost Estimate
CONSTRUCTION	$2,390,000.00	10/09/2020	$3,000,202.40
RIGHT OF WAY	$10,000.00	10/09/2020	$74,000.00
UTILITIES	$100,000.00	10/09/2020	

Explanation for Cost Change and Contingency Justification:

Project re-scoped: Alternate alignment proposed due to high impact cost to Williams-Transco Pipelines from original alignment.

Attachments:

Georgia Department of Transportation

Interoffice Memo

Design Phase Leader Validation of Final QC/QA for Construction Cost Estimate Used In This Revision to Programmed Costs:

Consultant Company or GDOT Design Office:	
Printed Name:	
Title:	
Signature:	
Date:	

FOR PROJECTS WITH A LOCAL SPONSOR	
If the project has a local sponsor, the project manager should ensure that the local authority completes the following validation indicating that it has reviewed the construction cost estimate and whether it is in concurrence with the construction costs presented.	
Please select the appropriate validation below upon review of the cost estimate: ☐ I acknowledge that I have reviewed the project construction cost estimate and concur with the costs presented. ☐ I acknowledge that I have reviewed the project construction cost estimate but do not concur with the costs presented.	
Please provide an explanation for non-concurrence.	
Local Authority Name and Title:	
Local Authority Signature:	
Date:	

Georgia Department of Transportation

Interoffice Memo

Cost Estimate Worksheet:

CONSTRUCTION COST ESTIMATE (Required base estimate entered from CES and should not include E&I). →	**A**	$ 2,354,946.06
ENGINEERING AND INSPECTION (The default E&I percentage is 5.0%, but may be adjusted per project scope.) →	**D**	$ 117,747.30

Construction Cost	E&I Percentage	E&I Cost
B	C	D = B x C
$ 2,354,946.06	5%	$ 117,747.30

CONTINGENCY (Refer to the Risk and Contingencies Table included in GDOT Policy 3A-9 Cost Estimating Purpose) →	**I**	$ 494,538.67

Construction Cost	E&I Cost	Construction + E&I	Contingency Percentage	Contingency Cost
E	F	G = E + F	H	I = G x H
$ 2,354,946.06	$ 117,747.30	$ 2,472,693.36	20%	$ 494,538.67

ASPHALT FUEL PRICE ADJUSTMENT (Leave blank if not applicable) →	**Q**	$ 32,970.36

Date	Mar 2021
Regular Unleaded	$2.245/ GAL
Diesel	$2.573/ GAL
Liquid AC	$439.00/ TON

Current Asphalt Fuel Index Prices can be found at the link below:

http://www.dot.ga.gov/PS/Materials/AsphaltFuelIndex

	Description	Tons	Percentage of Asphaltic Concrete	Tons of Asphaltic Concrete	Total Monthly Tonnage of Asphalt Cement (TMT)	Monthly Asphalt Cement Price month project let (APL)	Max. Cap	Monthly Asphalt Cement Price month placed (APM)	Price Adjustment (PA)
		J	K	L = J x K	M = Sum of Columns L, T & W	N	O	P = (N x O)+N	Q = [((P - N) / N)] x M x N
Liquid AC	Leveling	150.00 TN	5.00%	7.50 TN	125.17 TN	$439.00/ TON	60%	$ 702.40	$ 32,970.36
	Patching	50.00 TN	5.00%	2.50 TN					
	9.5 mm SP	0.00 TN	5.00%	0.00 TN					
	12.5 OGFC	0.00 TN	5.00%	0.00 TN					
	12.5 PEM	0.00 TN	5.00%	0.00 TN					
	12.5 mm SP	351.00 TN	5.00%	17.55 TN					
	19 mm SP	468.00 TN	5.00%	23.40 TN					
	25 mm SP	1425.00 TN	5.00%	71.25 TN					
Bituminous Tack Coat		Tack Coat	GL/TN	Tons					
	Description	R	S	T = R/S					
	Tack Coat	692.00 GL	232.8234 GL/TN	2.97 TN					
Bituminous Tack Coat (Surface Treatment)		SY	GL/SY	TN					
	Description	U	V	W = (U x V) / (232.8234 GL/TN)					
	Single Surface Treatment	0.00 SY	0.20 Gl/SY	0.00 TN					
	Double Surface Treatment	0.00 SY	0.44 Gl/SY	0.00 TN					
	Triple Surface Treatment	0.00 SY	0.71 Gl/SY	0.00 TN					

CONSTRUCTION TOTAL COST →	**X = A+D+I+Q**	$ 3,000,202.40
RIGHT OF WAY COST →	**Y**	$ 74,000.00
UTILITIES COST (Provided by Utility Office) →	**Z = Sum of Reimbursable Costs**	$ -

Utility Owner	Reimbursable Cost	Utility Owner	Reimbursable Cost

Cost Estimate Budget Class Report

Cost Estimate: 0015421 - 0015421

Cost Estimation Phase: 2-DE

Cost Estimate Item Total: $2,354,946.06

Cost Estimate Budget Class Report - Estimate Level Details

Budget Class	Amount	Assignment Level
	$2,354,946.06	Cost Estimate

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	5	150-1000	TRAFFIC CONTROL -	1.000	LS	$90,000.00
	10	153-1300	FIELD ENGINEERS OFFICE TP 3	1.000	EA	$82,484.49
	15	210-0100	GRADING COMPLETE -	1.000	LS	$225,000.00
	20	310-1101	GR AGGR BASE CRS, INCL MATL	4,683.000	TN	$148,890.60
	25	318-3000	AGGR SURF CRS	100.000	TN	$3,830.63
	30	402-1802	RECYCLED ASPH CONC PATCHING, INCL BITUM MATL & H LIME	50.000	TN	$8,444.69
	35	402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	150.000	TN	$20,247.96
	40	402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1,244.000	TN	$131,413.06
	45	402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	351.000	TN	$39,407.48
	50	402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	468.000	TN	$52,002.77
	55	413-0750	TACK COAT	692.000	GL	$1,329.97
	60	432-5010	MILL ASPH CONC PVMT, VARIABLE DEPTH	501.000	SY	$10,048.49
	65	439-0018	PLAIN PC CONC PVMT, CL 3 CONC, 8 INCH THK	4,212.000	SY	$259,791.82
	70	441-0006	CONC SLOPE PAV, 6 IN	1,749.000	SY	$78,661.76
	75	441-0204	PLAIN CONC DITCH PAVING, 4 IN	550.000	SY	$29,461.74
	80	441-3999	CONCRETE V GUTTER	647.000	LF	$19,410.00

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	85	456-2015	INDENTATION RUMBLE STRIPS - GROUND-IN-PLACE (SKIP)	0.910	GLM	$3,680.95
	90	500-3115	CLASS A CONCRETE, TYPE P2, RETAINING WALL	152.000	LF	$93,924.36
	95	500-9999	CLASS B CONC, BASE OR PVMT WIDENING	20.000	CY	$7,034.97
	100	620-0100	TEMPORARY BARRIER, METHOD NO. 1	1,900.000	LF	$69,441.45
	105	621-6002	CONCRETE BARRIER, TP S-2	734.000	LF	$171,022.00
	110	621-6200	CONCRETE SIDE BARRIER, TP 2-S	152.000	LF	$100,357.91
	115	621-6201	CONCRETE SIDE BARRIER, TP 2-SA	185.000	LF	$133,029.36
	120	632-0003	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	3.000	EA	$18,869.18
	125	641-1100	GUARDRAIL, TP T	42.000	LF	$3,370.97
	130	641-1200	GUARDRAIL, TP W	1,240.000	LF	$26,905.81
	135	641-5001	GUARDRAIL ANCHORAGE, TP 1	3.000	EA	$4,571.85
	140	641-5015	GUARDRAIL TERMINAL, TP 12A, 31 IN, TANGENT, ENERGY-ABSORBING	3.000	EA	$8,400.00
	145	643-0010	FIELD FENCE WOVEN WIRE	1,700.000	LF	$15,824.43
	150	643-8000	GATE, FIELD FENCE -	3.000	EA	$2,006.60
	155	643-8200	BARRIER FENCE (ORANGE), 4 FT	1,200.000	LF	$3,104.39
	160	648-1350	IMPACT ATTENUATOR UNIT, TYPE P -	2.000	EA	$57,312.37
	165	550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	251.000	LF	$14,281.92
	170	550-1240	STORM DRAIN PIPE, 24 IN, H 1-10	120.000	LF	$8,086.20

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	175	550-1300	STORM DRAIN PIPE, 30 IN, H 1-10	25.000	LF	$2,662.89
	180	550-2180	SIDE DRAIN PIPE, 18 IN, H 1-10	110.000	LF	$5,148.21
	185	550-3618	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE	4.000	EA	$2,817.65
	190	550-4218	FLARED END SECTION 18 IN, STORM DRAIN	3.000	EA	$2,533.19
	195	550-4224	FLARED END SECTION 24 IN, STORM DRAIN	1.000	EA	$977.23
	200	550-4230	FLARED END SECTION 30 IN, STORM DRAIN	1.000	EA	$1,299.14
	205	576-1015	SLOPE DRAIN PIPE, 15 IN	50.000	LF	$2,610.81
	210	600-0001	FLOWABLE FILL	11.000	CY	$6,554.97
	215	668-2100	DROP INLET, GP 1	1.000	EA	$3,366.61
	220	668-4300	STORM SEWER MANHOLE, TP 1	3.000	EA	$7,800.00
	225	668-4311	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	2.000	LF	$700.00
	230	636-1033	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	59.000	SF	$1,194.55
	235	636-1036	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 11	78.000	SF	$1,784.40
	240	636-1045	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 11	16.000	SF	$382.17
	245	636-2070	GALV STEEL POSTS, TP 7	53.000	LF	$586.62
	250	636-2080	GALV STEEL POSTS, TP 8	71.000	LF	$874.13
	255	653-0120	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	7.000	EA	$865.93
	260	653-0140	THERMOPLASTIC PVMT MARKING, ARROW, TP 4	3.000	EA	$993.08

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	265	653-1810	THERMOPLASTIC SOLID TRAF STRIPE, 10 IN, WHITE	117.000	LF	$364.37
	270	653-3810	THERMOPLASTIC SKIP TRAF STRIPE, 10 IN, WHITE	566.000	GLF	$1,159.73
	275	653-1704	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	24.000	LF	$174.24
	280	653-6004	THERMOPLASTIC TRAF STRIPING, WHITE	300.000	SY	$1,876.76
	285	653-6006	THERMOPLASTIC TRAF STRIPING, YELLOW	200.000	SY	$1,243.06
	290	653-8025	WET WEATHER THERMOPLASTIC SOLID TRAFFIC STRIPE, 5 IN, WHITE	1.100	LM	$7,594.84
	295	653-8030	WET WEATHER THERMOPLASTIC SOLID TRAFFIC STRIPE, 5 IN, YELLOW	1.100	LM	$6,807.41
	300	654-1001	RAISED PVMT MARKERS TP 1	105.000	EA	$1,063.47
	305	654-1003	RAISED PVMT MARKERS TP 3	85.000	EA	$765.00
	310	656-0050	REMOVE EXIST SOLID TRAF STRIPE, 5 IN, THERMOPLASTIC	1,200.000	LF	$1,200.00
	315	647-1000	TRAFFIC SIGNAL INSTALLATION NO -	1.000	LS	$150,000.00
	320	163-0520	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	200.000	LF	$4,000.00
	325	163-0301	CONSTRUCT AND REMOVE CONSTRUCTION EXITS	2.000	EA	$3,456.35
	330	163-0527	CONSTRUCT AND REMOVE RIP RAP CHECK DAMS, STONE PLAIN RIP RAP/SAND BAGS	30.000	EA	$14,400.00
	335	163-0528	CONSTRUCT AND REMOVE FABRIC CHECK DAM - TYPE C SILT FENCE	150.000	LF	$1,751.88

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	340	163-0540	CONSTRUCT AND REMOVE RETROFIT, STA NO -	1.000	EA	$2,500.00
	345	163-0542	CONSTRUCT AND REMOVE STONE FILTER RING	2.000	EA	$1,766.95
	350	163-0550	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	3.000	EA	$812.43
	355	165-0010	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	4,700.000	LF	$2,590.45
	360	165-0030	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	3,400.000	LF	$3,188.11
	365	165-0041	MAINTENANCE OF CHECK DAMS - ALL TYPES	420.000	LF	$927.56
	370	165-0095	MAINTENANCE OF RETROFIT, STA NO -	1.000	EA	$350.00
	375	165-0101	MAINTENANCE OF CONSTRUCTION EXIT	2.000	EA	$1,168.29
	380	165-0105	MAINTENANCE OF INLET SEDIMENT TRAP	3.000	EA	$248.84
	385	165-0111	MAINTENANCE OF STONE FILTER RING	2.000	EA	$551.36
	390	165-0310	MAINTENANCE OF CONSTRUCTION EXIT TIRE WASH AREA (PER EACH)	2.000	EA	$2,400.00
	395	167-1000	WATER QUALITY MONITORING AND SAMPLING	2.000	EA	$724.61
	400	167-1500	WATER QUALITY INSPECTIONS	18.000	MO	$11,887.68
	405	171-0010	TEMPORARY SILT FENCE, TYPE A	4,700.000	LF	$13,144.40
	410	171-0030	TEMPORARY SILT FENCE, TYPE C	3,400.000	LF	$17,094.66
	415	603-2181	STN DUMPED RIP RAP, TP 3, 18 IN	200.000	SY	$11,757.10
	420	603-7000	PLASTIC FILTER FABRIC	200.000	SY	$1,060.49

Cost Estimate Budget Class Report - Item Level Details

Budget Class	Line Number	Item	Item Description	Quantity	Unit	Amount
	425	700-6910	PERMANENT GRASSING	3.500	AC	$7,700.00
	430	711-0200	TURF REINFORCING MATTING, TP 2	2,200.000	SY	$11,000.00
	435	716-2000	EROSION CONTROL MATS, SLOPES	10,500.000	SY	$13,005.93
	440	163-0232	TEMPORARY GRASSING	7.000	AC	$2,096.94
	445	163-0240	MULCH	105.000	TN	$12,127.49
	450	169-0040	WET DETENTION POND, NO. -	1.000	EA	$43,500.00
	455	169-0041	WET DETENTION BASIN MAINTENANCE	1.000	EA	$7,000.00
	460	700-7000	AGRICULTURAL LIME	8.000	TN	$2,619.18
	465	700-8000	FERTILIZER MIXED GRADE	3.000	TN	$2,634.58
	470	700-8100	FERTILIZER NITROGEN CONTENT	175.000	LB	$430.14

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 7/16/2020 Project: 15421
Revised: 2/25/2021 County: Walton
PI: 15421
Description: SR 138 @ SR 10/US 78 Westbound Onramp
Project Termini: SR 138/SR 10

Existing ROW: Varies
Parcels: 2 Required ROW: Varies

Land and Improvements _____ $73,350.00

Proximity Damage	*$0.00*
Consequential Damage	*$0.00*
Cost to Cures	*$0.00*
Trade Fixtures	*$0.00*
Improvements	*$0.00*

Valuation Services _____ $0.00

Legal Services _____ $0.00

Relocation _____ $0.00

Demolition _____ $0.00

Administrative _____ $0.00

TOTAL ESTIMATED COSTS _____ $73,350.00

TOTAL ESTIMATED COSTS (ROUNDED) _____ ***$74,000.00***

Prepared By: Jimmy Parker _____ 03/01/21
Print Name Signature Date

Cost Estimation Supervisor : _____
Print Name Signature Date

NOTE: Superviser is only attesting that the estimate was completed using the correct information provided for the the project. The Supervisor is not attesting to property values or the accuracy of the market value estimations provided in this report. No Market Appreciation is included in this Preliminary Cost Estimate.

Comments:

From: Westberry, Lisa
To: Kimbrough, Kimberly J
Cc: Rosenstein, Rachael E
Subject: PI 0015421, Walton County - Revised Estimated Mitigation Cost for Concept Report
Date: Tuesday, October 13, 2020 11:36:02 AM
Attachments: image001.png

Good morning,

As requested, the estimated mitigation cost for the change in concept is **$75,000.00**. This estimate is based on a review of aerial photography, NWI mapping, and NRCS soil surveys and not an actual field verification. The total cost of mitigation credits could remain the same or change once the ecology field survey is complete.

If you should have any questions or need any additional information, please do not hesitate to contact me.

Respectfully,

Lisa Westberry
Special Projects Coordinator

Office of Environmental Services
One Georgia Center, 16th Floor
600 West Peachtree Street, NW
Atlanta, GA, 30308
404.631.1772

Vote daily for Columbus Riverwalk, on the banks of the Chattahoochee River, as the People's Choice. Riverwalk was named a top twelve finalist in AASHTO's 2020 America's Transportation Awards. The People's Choice Award is decided by online popular vote. Help GDOT bring home national recognition and a $10,000 award that will be donated to charity. Vote online once a day per device (laptop, tablet or mobile) through Oct. 25. Ask your coworkers, family and friends to vote too. Visit www.dot.ga.gov for a direct voting link.

Georgia Department of Transportation

Interoffice Memo

FILE

Project No: **N/A**
County **Walton**
P.I.# **0015421**
Description: ***SR 138 @ SR 10/US 78 - New Ramp***

Office: **GAINESVILLE**
Date: **October 30, 2020**

FROM Yulonda Pride-Foster, District Utilities Manager

TO Kimberly Kimbrough, Project Manager

SUBJECT **PRELIMINARY UTILITY COST ESTIMATE**

A review of utilities located on the above referenced project has been conducted with Concept Layout plans. Listed below is a breakdown of the anticipated reimbursable and non-reimbursable cost.

Utility Owner	Reimbursable	Non-Reimbursable	In Contract/CIA (Non-Reimbursable)	Estimate Based on
City of Monroe - Power **	$0.00	$0.00	$35,000.00	Site Visit / Available Drawings
MEAG Transmission	$12,000.00	$0.00	$0.00	Site Visit / Available Drawings
Zayo Fiber	$0.00	$1,350.00	$0.00	Site Visit / Available Drawings
City of Social Circle - Gas **	$0.00	$0.00	$7,800.00	Site Visit / Available Drawings
Williams Transco-Gas Pipeline	$0.00	$2,655,000.00	$0.00	Site Visit / Available Drawings
Total 100.00%	$12,000.00	$2,656,350.00	$42,800.00	
Department Responsibility 100.00%	$12,000.00			
Local Sponsor Responsibility 0.00%	$0.00			PFA Dated N/A with N/A

** Indicates Potential Utility Aid Request from Local Gov't

Estimate is based on the best available information at the current stage, unforeseen prior rights information may be provided by the Utility Company at a later date that could cause some non-reimbursable costs to shift to the reimbursable cost column.

If the Local Govts request and are granted Utility Aid, the Reimbursable Costs could increase by as much as $42,800.00 bringing the total Reimbursable Costs to $54,800.00 . If design/ROW changes cause conflicts with any Transmission Structures, the Reimbursable Costs will increase substantially.

If additional information is needed, please contact Yulonda Pride-Foster at 770-533-8320 or Lynn Palmer at 770-533-8319.

cc: Patrick Allen, State Utilities Administrator
Marcela Coll, State Utilities Preconstruction Manager
Sue Anne Decker, District Preconstruction Engineer
Shannon Giles, Area Manager
File

Original Version: May 24, 2013
Revision: Feb. April 5, 2018

Concept Utility Report

Project Number: N/A

District: 1-Gainesville

County: Walton

Prepared by: Terri Holbrook

P.I. # 0015421

Date: 11/2/2020

Project Description: SR 138 @ SR 10/US 78

The information provided herein has been gathered from Georgia811and/or field visits and serves as an estimate. Nothing contained in this report is to be used as a substitute for 1st Submission or SUE.

Are SUE services recommended? Choose an item.

Level: ☒A ☐B ☐C ☐D

Public Interest Determination (PID):

☐Automatic ☐Mandatory ☐Consideration ☒No Use ☐Exempt

Is a separate utility funding phase recommended? Yes

Potential Project (Schedule/Budget) Impacts: Since proposed ROW will encroach on Power and Pipeline easements, Easement Limited Agreements will be required; Transco Pipeline-Past experience shows that widening (and additional fill) may cause full pipe replacement rather than just casing extension or pipe coating; there is an unknown cross country fiber running within the pipline easement it is believed to belong to Zayo

Capital Improvement Projects (Utilities) Anticipated in the Area: No

Project Specific Recommendations for Avoidance/Mitigation: Avoid the pipeline and the transmission line

Right of Way Coordination: N/A

Environmental Coordination: N/A

Additional Remarks: Utility owners were compiled by EDEN Ticket and a field visit and are subject to change after 1st submission

Original Version: May 24, 2013
Revision: Feb. March 8, 2018

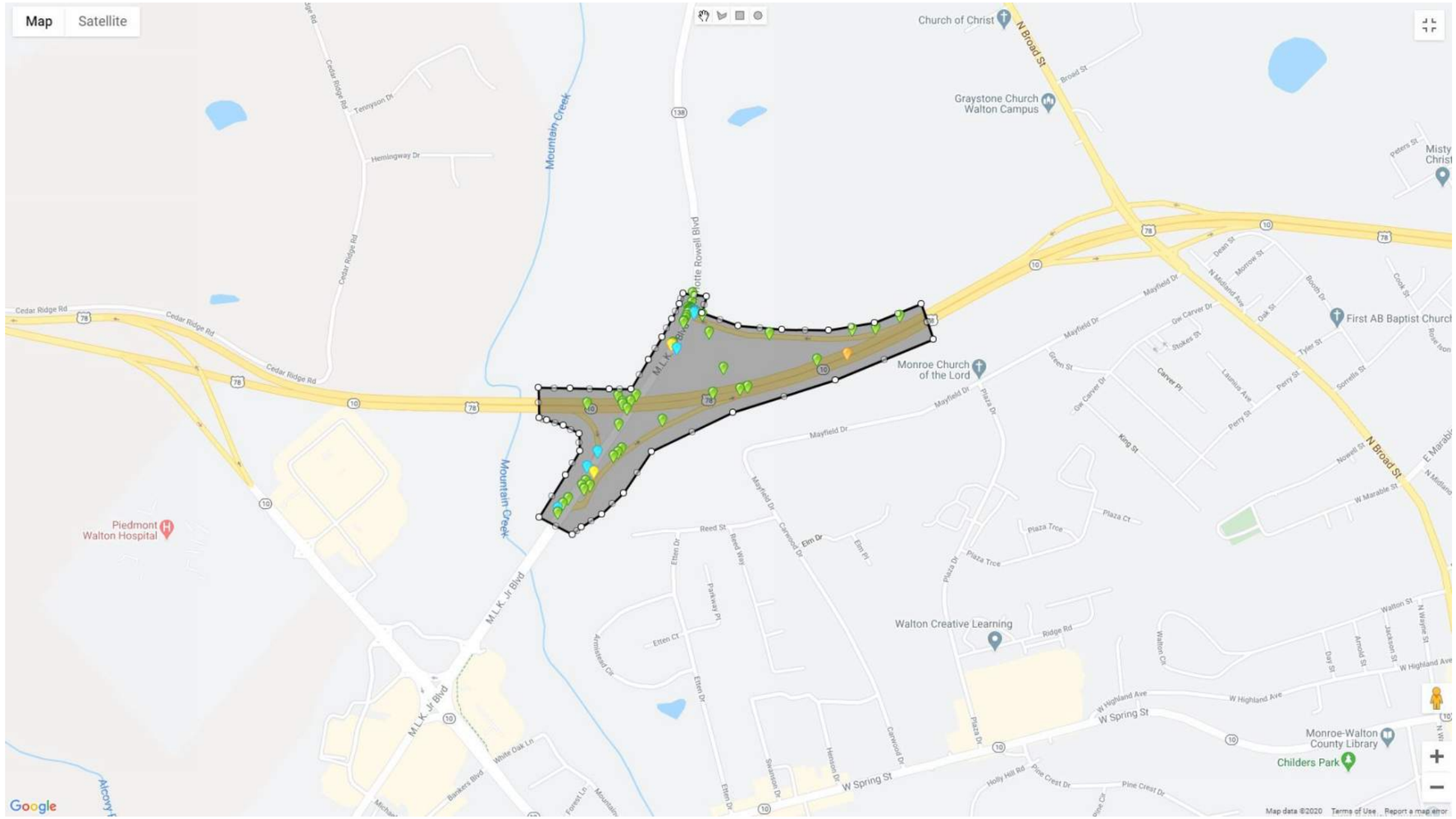
Utilities have facilities within the project limits.

Utilities have been identified using Georgia811 and/or field visits.

Facility Owner	**Facility Owner Contact Email Address**	**Existing Facilities/ Appurtenances**	**General Description of Location**	**Facilities to Avoid** *approx. limits*	**Facilities Retention Recommended** *approx. limits*	**Comments**
City of Monroe Water	Rodney Middlebrooks rmiddlebrooks@monroega.gov	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
City of Monroe Sewer	Rodney Middlebrooks rmiddlebrooks@monroega.gov	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
City of Monroe Gas	Rodney Middlebrooks rmiddlebrooka@monroega.gov	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
City of Monroe Electric	Rodney Middlebrooks rmiddlebrooks@monroega.gov	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
City of Monroe Telecom	Rodney Middlebrooks rmiddlebrooks@monroega.gov	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
City of Social Circle Gas	Paul Schlageter pschlagateter@socialcirclega.com	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
Williams Natural Gas-Transco	Brian Hadley Brian.Hadley@williams.com	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
MEAG Power	Brian Teal bteal@meagpower.org	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.

Note: *To add additional rows, click the bottom right corner of the box above, then click the blue* + *that will appear. Please add additional rows prior to entering text.*

Year	Crash Type						
	Angle	Head On	Not a collision with motor vehicle	Rear End	Sideswipe-Opposite Direction	Sideswipe-Same Direction	Total
2014	1		2	6			9
2015	1	1	5	12	1	1	21
2016	1		3	7			11
2017			7	2		1	10
2018	3	2	6	8		1	20
Total	6	3	23	35	1	3	**71**



- Green dots - non-injury crashes
- Blue dots - least severe injury crashes
- Yellow dots - more severe injury crashes
- Orange dots - most severe injury crashes

Georgia Department of Transportation

Interoffice Memo

FILE: Walton County
P.I. # 0015421

DATE: January 14, 2021

FROM: Thomas McQueen, Assistant State Transportation Planning Administrator

TO: Kimberly Nesbitt, State Program Delivery Administrator
Attention: KIMBERLY KIMBROUGH

SUBJECT: **Design Traffic Forecasts** for SR 138 at SR 10/ US 78

The approved design traffic forecasts for the above project is attached in 0015421_10.pdf.

If you have any questions concerning this information, please contact Dan Funk at 404-631-1959.

TEM/drf

SOUTHEASTERN ENGINEERING, INC.

2470 Sandy Plains Road
Marietta, GA 30066
(Office) 770-321-3936
cmaddox@seengineering.com

Date: February 12, 2021
To: Georgia Department of Transportation (GDOT), District One
From: Chris Maddox, PE, PTOE; Southeastern Engineering, Inc. (SEI)
RE: P.I. # 0015421 (SR 138 @ SR 10/US 78) ICE Memo
CC: Michael E. Alligood, PE, PPI

Southeastern Engineering, Inc. (SEI) is performing an Intersection Control Evaluation (ICE) to identify an appropriate roadway configuration and intersection control at SR 138 and US 78/SR 10 intersection. PI #0015421 proposes constructing a WB On-Ramp (loop ramp), on US 78/SR 10 from SR 138 at the existing intersection. The existing intersection is controlled by a traffic signal. The study intersection is shown below in **Figure 1**. This memo explains the ICE methodology for this intersection.

Figure 1: Study Intersection Location

Data Collection

SEI prepared a traffic forecasting report for PI #0015421 which validated existing traffic volumes in the project area and determined the future levels of traffic to be served by the project. The traffic forecasting report, including traffic flow diagrams, was approved by GDOT Planning on January 14th, 2021.

Table 1 includes existing year 2020, base year 2024, and design year 2044 annual average daily traffic (AADT) volumes for each roadway segment composing the study intersection. Approved volumes for 2020, 2024, and 2044 build scenarios are included in **Attachment A**.

Table 1: SR 138 at US 78 / SR 10 WB Ramp AADT				
Year	Location	NB/EB	SB/WB	Total
2020	SR 138 north of US 78 / SR 10 WB Ramp	4,225	4,050	8,275
	SR 138 south of US 78 / SR 10 WB Ramp	4,050	9,800	13,850
	US 78 / SR 10 WB Ramp east of SR 138	5,925	-	5,925
2024	SR 138 north of US 78 / SR 10 WB Ramp	7,025	8,025	15,050
	SR 138 south of US 78 / SR 10 WB Ramp	6,275	12,600	18,875
	US 78 / SR 10 WB Ramp east of SR 138	7,450	2,125	9,575
2044	SR 138 north of US 78 / SR 10 WB Ramp	8,450	9,475	17,925
	SR 138 south of US 78 / SR 10 WB Ramp	7,875	15,925	23,800
	US 78 / SR 10 WB Ramp east of SR 138	9,450	2,425	11,875

Crash data for the study area was obtained from Georgia Accident Reporting System (GEARS) for years 2016 through 2020. **Table 2** summarizes the accidents within the study area.

Table 2: SR 138 at US 78 / SR 10 WB Ramp Crashes								
Year	Crashes by Collision Type					Totals		
	Rear-End	Angle	Struck Object	Sideswipe	Head-on	Crashes	Injury	Fatal
2016	6	1	0	0	0	7	1	0
2017	2	0	2	0	0	4	1	0
2018	9	2	0	0	0	11	0	0
2019	2	2	0	0	0	4	1	0
2020	6	0	2	0	0	8	2	0
Percentage	73%	15%	12%	0%	0%			
Total	25	5	4	0	0	34	5	0

The entire study area has a total of 34 crashes from 2016 to 2020, with a majority of accidents being rear-end collisions. Raw crash data details are included in **Attachment B**.

Intersection Control Evaluation

SEI performed an Intersection Control Evaluation (ICE) and as part of the analysis, feasible intersection controls were identified and analyzed per the Highway Capacity Manual (6th edition) methodology. An analysis of peak hour traffic conditions was performed to determine the level of service (LOS) at the study intersection. LOS for an intersection is based on vehicular delay at the intersection and is a typical measure of effectiveness used to evaluate intersection operations. The HCM provides ranges of delay for each LOS definition, spanning from very minimal delays (LOS A) to high delays (LOS F). LOS F is considered unacceptable for most drivers. An overall intersection delay was used for each intersection control's evaluation. The ICE tool scores the feasible intersection controls based on project cost, traffic operations, safety analysis, environmental impacts, and stakeholder posture. The higher the ICE score, the more

preferable the intersection control is per the tool. The completed ICE spreadsheet is included in **Attachment C**.

The intersection improvements are expected to be completed by the year 2024. A design year of 2044 was utilized for the analysis. **Table 3** summarizes the operations and ICE score of the intersection controls that advanced onto Stage 2.

Table 3: SR 138 at US 78 / SR 10 WB Ramp ICE

	Single Lane Roundabout		Multilane Roundabout		Traffic Signal		Continuous Green-T		Traffic Signal (Add'l Imprv)	
2044 Design Year Int. Delay	121 (F)	254 (F)	14 (B)	26 (D)	53 (D)	87 (F)	39 (D)	74 (E)	24 (C)	33 (C)
Final ICE Stage 2 Score	2.0		4.8		3.3		3.7		4.7	

The concept intersection configuration was used as the baseline for the evaluation, the concept is included in **Attachment D**. The concept includes a proposed southbound left turn lane, northbound right turn lane, and single eastbound receiving lane, in addition to the existing roadway configuration. The feasible alternatives analyzed for this intersection include a traffic signal (existing condition), single lane roundabout, multilane roundabout, signalized continuous green-T, and adding lanes with the existing traffic signal.

Due to the approach volumes in each direction and overall capacity, a traffic signal, as represented in the concept, does not operate acceptably in the PM peak hour by 2044. A single lane roundabout does not provide adequate capacity by 2044. A multilane roundabout provided a capable of levels of service for 2044. The multilane roundabout would require two southbound approach lanes, two southbound receiving lanes, one northbound approach lane, one northbound receiving lane, two westbound approach lanes, and one eastbound receiving lane. A continuous green-T was analyzed, but the intersection control is not expected to operate at an acceptable LOS in the PM peak. This control required a secondary southbound receiving lane. A traffic signal with dual westbound left turn lanes and an additional southbound receiving lane was analyzed. These improvements to the traffic signal as shown in the concept are expected to operate acceptably by 2044.

Although a multi-lane roundabout provides comparable operation and capacity demands, the limited right-of-way, nearby power easement, and adjacent bridge piers south of the intersection may render this intersection control alternative as infeasible. Therefore, the traffic signal with additional improvements was selected as the preferred alternative for the study intersection.

Conclusion

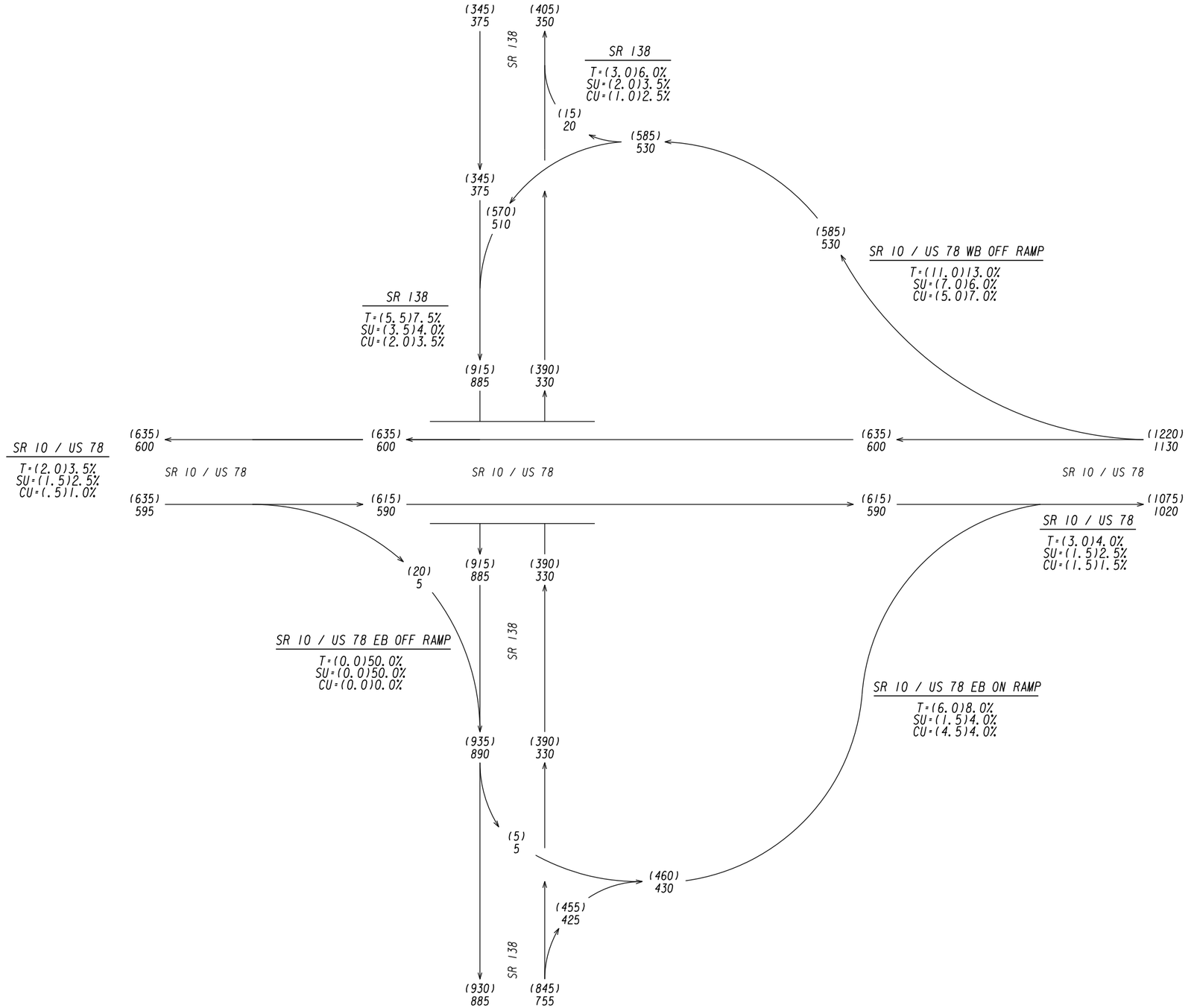
As part of PI #0015421, a loop on-ramp is proposed at the study intersection of SR 138 at US 78 / SR 10 WB. Due to the levels of traffic expected to utilize this intersection by 2044, the current configuration is not expected to provide acceptable levels of service. Based on the evaluation of the data, a traffic signal with additional improvements is recommended as the preferred alternative for the study intersection. This alternative provides acceptable levels of service, increases capacity, and minimizes the intersection's proposed footprint/right-of-way acquisition, while also addressing the project's needs in a balanced manner.

Attachments

- Attachment A
  - Approved 2020, 2024, & 2024 Traffic Flow Diagrams
- Attachment B
  - Crash Data
- Attachment C
  - ICE Tool
- Attachment D
  - PI #0015421 Concept

Attachment A

Approved 2020, 2024, & 2044 Traffic Flow Diagrams



WALTON COUNTY

LEGEND
(00) (PM) DHV
00 AM DHV

2020 DHV

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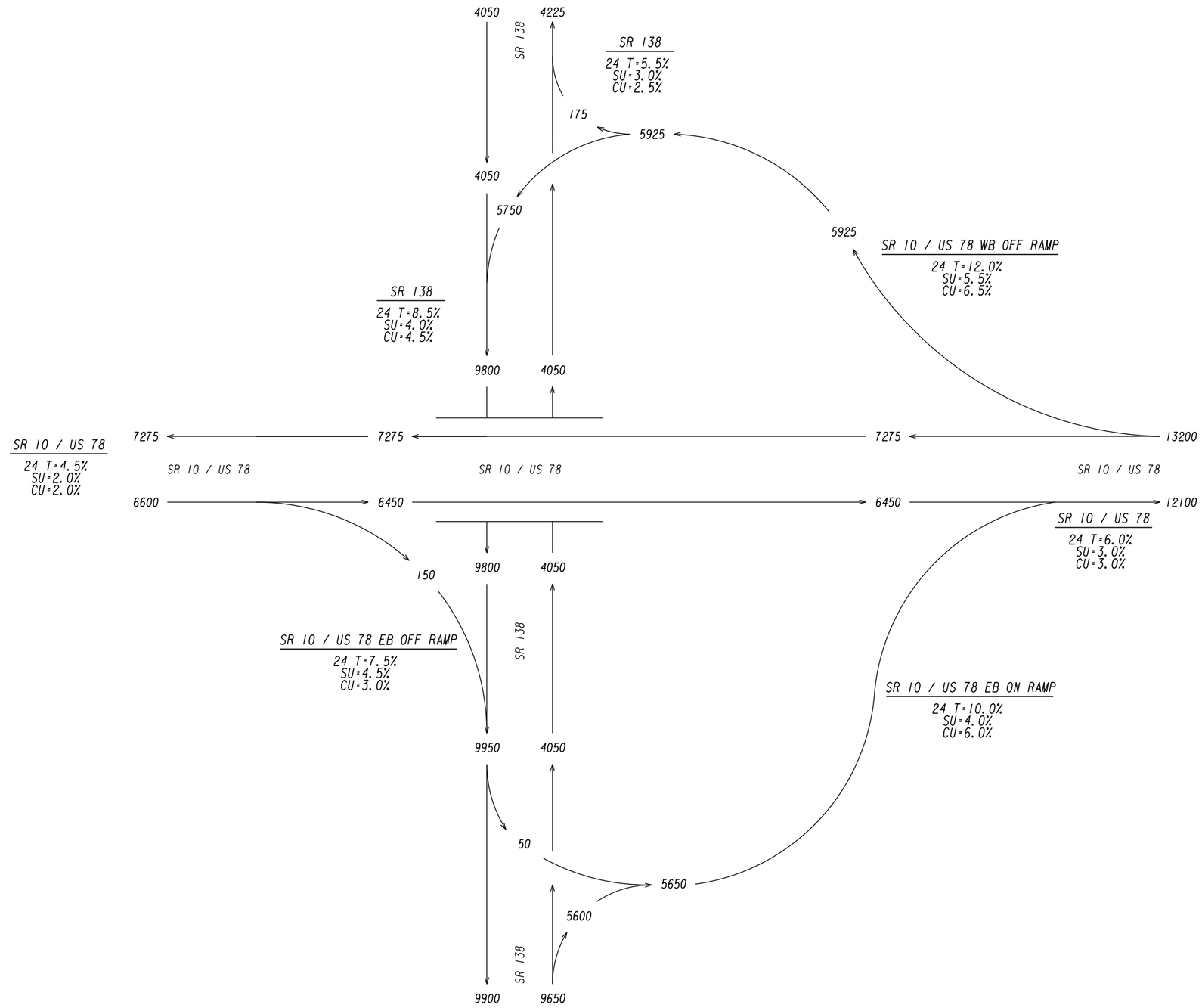
2470 Sandy Plains Road Marietta, Georgia 30066
tel: 770-321-3936 www.seengineering.com

NTS

REVISION DATES		

TRAFFIC DIAGRAM
PI#0015421: SR 138 AT SR 10 / US 78
WALTON COUNTY
EXISTING YEAR (2020) DHV

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		10-0001
VERIFIED:		DATE:		



WALTON COUNTY

LEGEND

00 2020 AADT

2020 AADT

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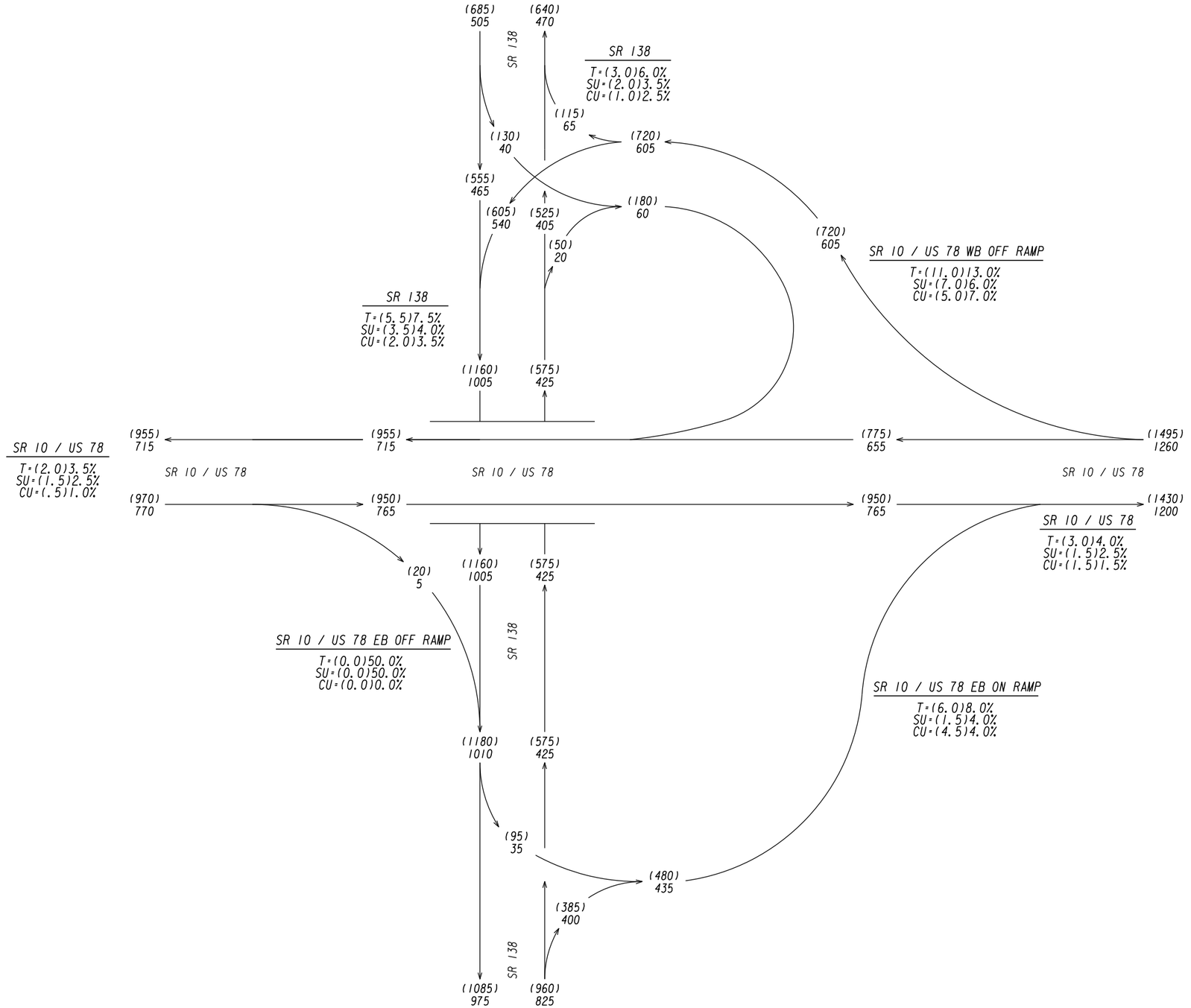
REVISION DATES

TRAFFIC DIAGRAM
PI#0015421: SR 138 AT SR 10 / US 78
WALTON COUNTY
EXISTING YEAR (2020) AADT

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		10-0002
VERIFIED:		DATE:		



LEGEND
(00) (PM) DHV
00 AM DHV

2024 DHV

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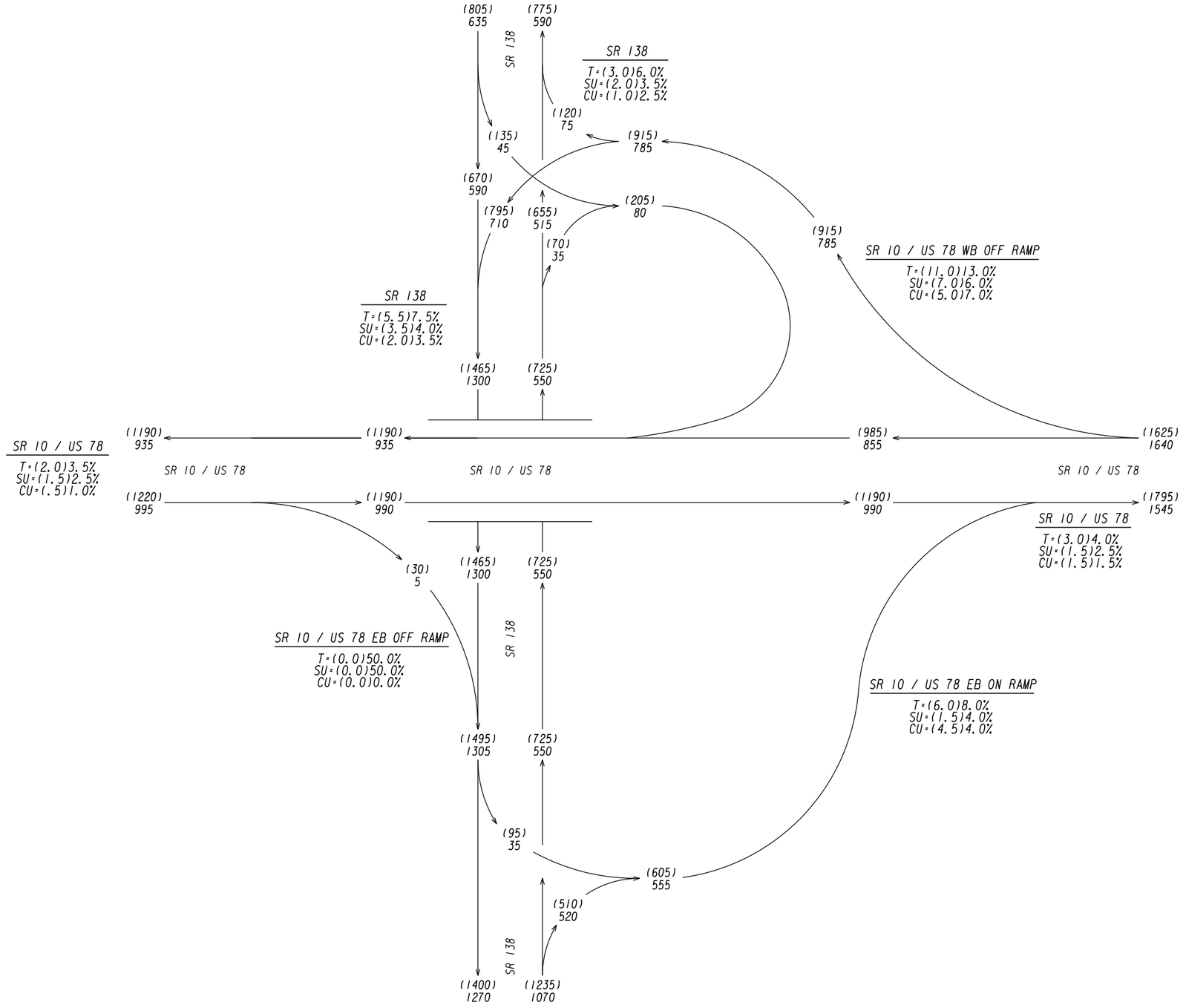
REVISION DATES		

TRAFFIC DIAGRAM
PI#0015421: SR 138 AT SR 10 / US 78
WALTON COUNTY
2024 DHV BUILD

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		10-0009
VERIFIED:		DATE:		

10/23/2015 GPLN



LEGEND

(00) (PM) DHV
00 AM DHV

2044 DHV

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2470 Sandy Plains Road Marietta, Georgia 30066
tel: 770-321-3936 www.seengineering.com

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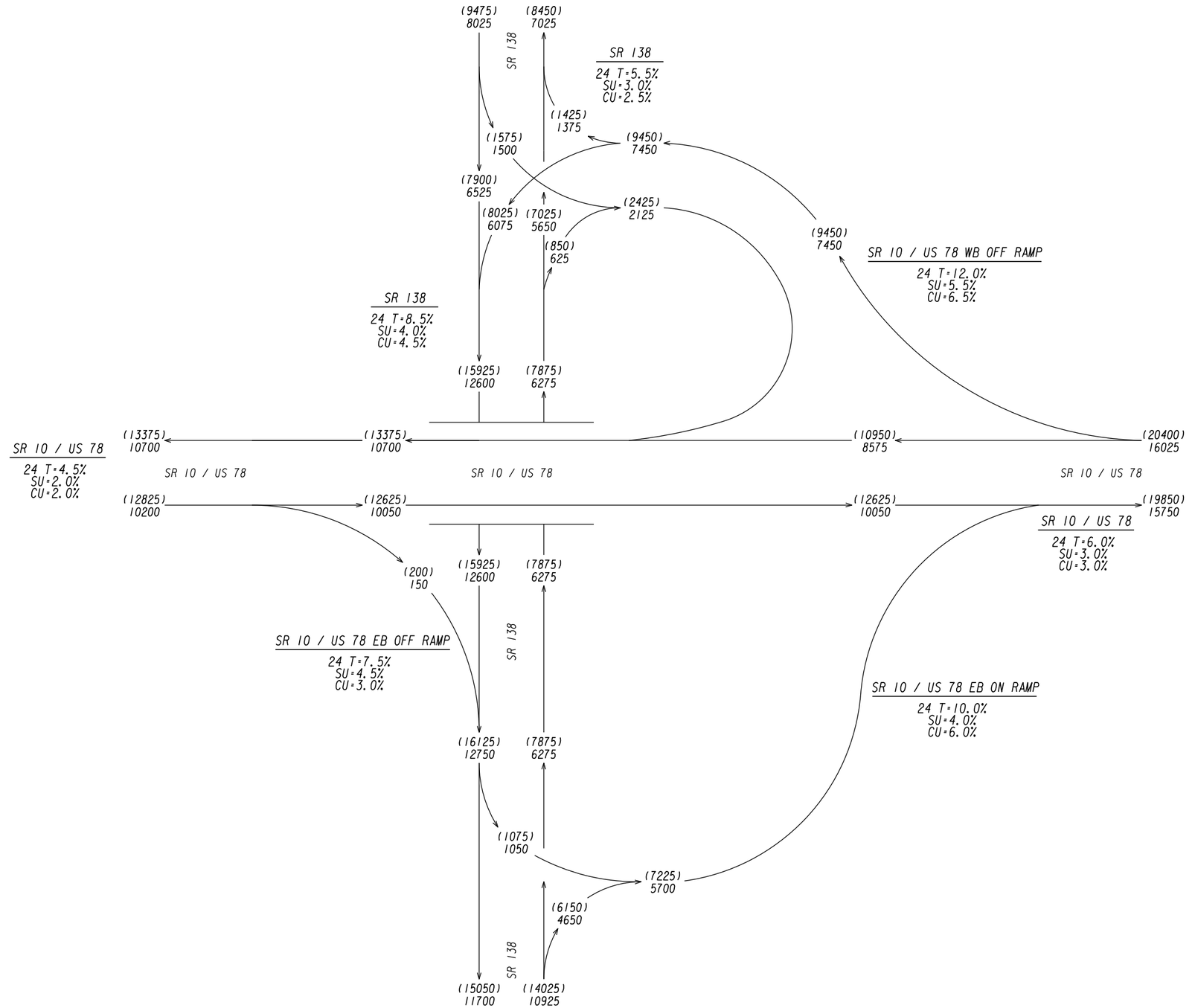
REVISION DATES

TRAFFIC DIAGRAM
PI#0015421: SR 138 AT SR 10 / US 78
WALTON COUNTY
2044 DHV BUILD

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		
CORRECTED:		DATE:		10-0010
VERIFIED:		DATE:		



LEGEND
(00) 2044 AADT
00 2024 AADT

2044 (DESIGN)
2024 (BASE)

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2470 Sandy Plains Road Marietta, Georgia 30066
tel: 770-321-3936 www.seengineering.com

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REVISION DATES

TRAFFIC DIAGRAM
PI#0015421: SR 138 AT SR 10 / US 78
WALTON COUNTY
2044/2024 AADT BUILD

CHECKED:		DATE:		DRAWING No.
BACKCHECKED:		DATE:		10-0011
CORRECTED:		DATE:		
VERIFIED:		DATE:		

Attachment B
Crash Data

AccidentNo	Date	Time	County	Route	IntersectingRoute	Injuries	Fatalities	MannerOfCollision	LocationOfImpact	FirstHarmfulEvent	Light	Surface	DirVeh1	DirVeh2	MnvrVeh1	MnvrVeh2	U1FirstHarmfulEvent	U2FirstHarmfulEvent	LatDecimal	LongDecimal	U1Factors	U2Factors
5612686	1/27/2016	8:25:00	WALTON	CHARLOTTE ROWELL BLVD	SR 138		0	0 Angle	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Turning Left	Turning Left	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804161	-83.735387	Following too Close	No Contributing Factors
5637568	2/12/2016	19:16:00	WALTON	SR 138	SR 10		2	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	DarkNot Lighted	Dry	West	West	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.803232	-83.735763	No Contributing Factors	No Contributing Factors
5664627	3/7/2016	9:13:00	WALTON	HIGHWAY 78 W	CHARLOTTE ROWELL BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804149	-83.735305	Following too Close	No Contributing Factors
5678184	3/15/2016	21:08:00	WALTON	SR 138	CHARLOTTE ROWELL BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	DarkNot Lighted	Dry	East	East	Backing	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804107	-83.735418	Improper Backing	No Contributing Factors
5895187	8/28/2016	19:27:00	WALTON	CHARLOTTE ROWELL BLVD	MARTIN LUTHER KING JR BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804114	-83.735241	Following too Close,Distracted	No Contributing Factors
5942728	9/29/2016	14:55:00	WALTON	SR 138	CHARLOTTE ROWELL BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	North	North	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.803612	-83.734827	No Contributing Factors	No Contributing Factors
5948818	10/7/2016	16:10:00	WALTON	CHARLOTTE ROWELL BLVD	US 78		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	East	East	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804201	-83.735385	Following too Close	No Contributing Factors
6180375	4/3/2017	16:15:00	WALTON	EXIT RAM SR 10 RP W	CHARLOTTE ROWELL BLVD		0	0 Not A Collision with Motor Vehicle	On Shoulder	Other Post/Pole Support	Daylight	Wet	West		Turning Left		Other Post/Pole Support		33.8042	-83.73543	Under the Influence (U.I.),Mechanical Or Vehicle Failure	
6185812	3/14/2017	5:56:00	WALTON	HWY 138 SR	S HIGHWAY 78 EXIT RP		1	0 Not A Collision with Motor Vehicle	On Shoulder	Utility Pole	DarkLighted	Wet	West		Turning Left		Utility Pole		33.804001	-83.735473	Driver Lost Control,Too Fast For Conditions	
6220483	5/5/2017	12:28:00	WALTON	CHARLOTTE ROWELL BLVD	25 OF A MILE N OF STATE		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Wet	South	South	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804546	-83.7353	No Contributing Factors	No Contributing Factors
6301366	4/23/2017	10:28:00	WALTON	HWY 138 RP	CHARLOTT ROWELL BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Wet	West	West	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804131	-83.73529	Following too Close	No Contributing Factors
6556368	1/17/2018	8:04:00	WALTON	CHARLOTTE ROWELL BLVD	HIGHWAY 78		0	0 Angle	On Roadway - Roadway Intersection		Daylight	Ice/Frost	None	South		Turning Left		Motor Vehicle In Motion	33.803888	-83.735545		No Contributing Factors
6558854	1/18/2018	21:30:00	WALTON	CHARLOTTE ROWELL BLVD	BOLD SPRINGS CONNECTOR		0	0 Angle	On Roadway - Non-Intersection	Motor Vehicle In Motion	DarkNot Lighted	Dry	North	North	Straight	Turning Left	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804321	-83.735328	Following too Close	Changed Lanes Improperly
6560281	1/20/2018	20:53:00	WALTON	MARTIN LUTHER KING JR BLVD	HWY 78		0	0 Rear End	On Roadway - Roadway Intersection	Parked Motor Vehicle	DarkNot Lighted	Dry	North	North	Straight	Stopped	Parked Motor Vehicle	Motor Vehicle In Motion	33.804081	-83.735436	Following too Close	No Contributing Factors
6679458	4/20/2018	7:32:00	WALTON	CHARLOTTE ROWELL BLVD	MLK JR BLVD		0	0 Rear End		Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804077	-83.73526	Following too Close	No Contributing Factors
6816489	8/3/2018	12:05:00	WALTON	HIGHWAY 78 W	HIGHWAY 138 ENTERANCE RP		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804129	-83.735285	Reaction to Object or Animal	No Contributing Factors
6831587	8/13/2018	8:40:00	WALTON	CHARLOTTE ROWELL BLVD	SR 138		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804669	-83.735233	Following too Close	No Contributing Factors
6851184	8/28/2018	11:30:00	WALTON	HIGHWAY 138	HIGHWAY 78		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	South	South	Turning Left	Turning Left	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804166	-83.735397	Following too Close	No Contributing Factors
6873464	9/13/2018	14:46:00	WALTON	CHARLOTTE ROWELL BLVD	SR 10		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	North	North	Negotiating A Curve	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804167	-83.735397	Under the Influence (U.I.)	No Contributing Factors
6917335	10/16/2018	5:20:00	WALTON	HWY 78	CHARLOTTE ROWELL		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	DarkLighted	Dry	West	West	Turning Left	Turning Left	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804184	-83.735346	Following too Close,Other	No Contributing Factors
6957391	11/13/2018	18:37:00	WALTON	CHAROLETTE ROWELL BLVD	HIGHWAY 138		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	DarkLighted	Wet	South	South	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804748	-83.735212	Following too Close	No Contributing Factors
7043843	12/20/2018	15:19:00	WALTON	EXIT FROM SR78 RP	CHAROLETTE ROWELL		0	0 Rear End	On Roadway - Non-Intersection		Daylight	Wet		West		Stopped		Motor Vehicle In Motion	33.804041	-83.73503		No Contributing Factors
7116413	3/8/2019	16:20:00	WALTON	HIGHWAY 78	HIGHWAY 138		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.80407	-83.735043	Following too Close	No Contributing Factors
7218367	5/1/2019	15:50:00	WALTON	CHARLOTTE ROWELL BLVD	PRIVATE DRWY		0	0 Angle	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	West	North	Making U-turn	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804901	-83.735178	Improper Turn	No Contributing Factors
7457345	11/29/2019	20:12:00	WALTON	GA-138	HIGHWAY 78		2	0 Angle	On Roadway - Roadway Intersection	Motor Vehicle In Motion	DarkLighted	Dry	East	West	Straight	Turning Left	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804167	-83.735398	Disregard Stop Sign/Signal,Too Fast For Conditions	No Contributing Factors
7528444	1/24/2020	16:59:00	WALTON	YOUTH JERSEY RD	SR 138		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Wet	South	South	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.803562	-83.73616	No Contributing Factors,Following too Close	No Contributing Factors
7585991	1/17/2020	12:16:00	WALTON	EXIT SR 10 RP	CHARLOTTE ROWELL BLVD		1	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.803923	-83.734627	No Contributing Factors,Following too Close	No Contributing Factors
7587153	2/5/2020	12:56:00	WALTON	EXIT SR 10 RP	CHARLOTTE ROWELL BLVD		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Wet	West	West	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.80417	-83.73537	Following too Close	No Contributing Factors
7588435	2/18/2020	15:12:00	WALTON	W OFF SR 10 RP	CHARLOTTE ROWELL RD		0	0 Rear End	Entrance/Exit Ramp	Motor Vehicle In Motion	Daylight	Wet	West	West	Negotiating A Curve	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804126	-83.73461	Following too Close,Too Fast For Conditions	No Contributing Factors
7693885	7/10/2020	18:00:00	WALTON	CHARLOTTE ROWELL BLVD	SR 10		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	South	South	Straight	Straight	Motor Vehicle In Motion	Motor Vehicle In Motion	33.80417	-83.73537	No Contributing Factors,Following too Close,Inattentive or Other Distracti	No Contributing Factors
7729065	10/2/2019	7:49:00	WALTON	EXIT SR 10 RP W	SR 138		0	0 Rear End	On Roadway - Roadway Intersection	Motor Vehicle In Motion	Daylight	Dry	West	West	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804127	-83.735285	Following too Close	No Contributing Factors
7742109	8/12/2020	8:40:00	WALTON	CHARLOTTE ROWELL BLVD	SR 10		1	0 Not A Collision with Motor Vehicle	On Shoulder	Overturn	Daylight	Dry	North		Turning Right		Overturn		33.804165	-83.735395	Improper Turn,Too Fast For Conditions	
7758608	9/1/2020	8:00:00	WALTON	HIGHWAY 138	HIGHWAY 78 E ON RAMP FROM M		0	0 Rear End	On Roadway - Non-Intersection	Motor Vehicle In Motion	Daylight	Dry	West	South	Straight	Stopped	Motor Vehicle In Motion	Motor Vehicle In Motion	33.804297	-83.735339	Following too Close	No Contributing Factors
7776548	9/17/2020	8:30:00	WALTON	CHARLOTTE ROWELL BLVD	HIGHWAY 78		0	0 Not A Collision with Motor Vehicle	On Roadway - Roadway Intersection	Other - Fixed Object	Daylight	Wet	North		Turning Left		Other - Fixed Object		33.80418	-83.73542	Improper Turn	

Attachment C
ICE Tool

GDOT INTERSECTION CONTROL EVALUATION (ICE) TOOL

ICE Version 2.15 | Revised 07/01/2019

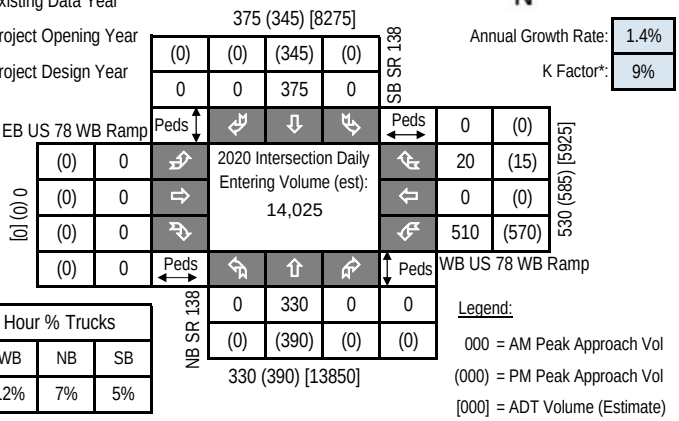
GDOT PI # (or N/A):	0015421	Request By:	
County:	Walton	GDOT District: 1 - Gainesville	
Major (State) Road:	SR 138	Speed Limit:	45 mph
Minor (Crossing) ST:	US 78 WB Ramp	Speed Limit:	35 mph
Major ST Direction:	North/South	Area Type:	Suburb/Transition
Intersection Control:	Signal (turn lanes on mainline)		
Prepared By:	SEI	Analyst:	DGP
Date:	3/23/2021	Project ID:	
Project Purpose:	WB on-ramp addition		

2020	Existing Data Year
2024	Project Opening Year
2044	Project Design Year

Annual Growth Rate: 1.4%

K Factor*: 9%

2020 Existing Year Volumes



Peak Hour % Trucks			
EB	WB	NB	SB
0%	12%	7%	5%

Legend:

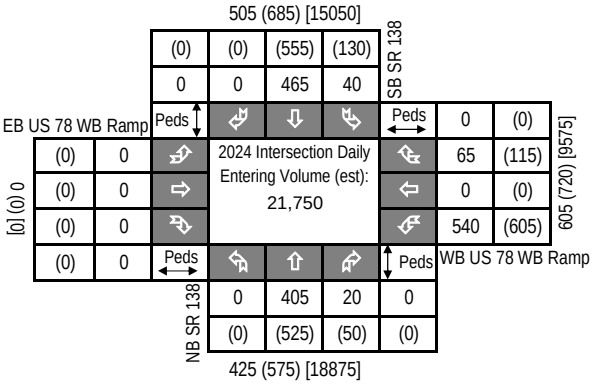
000 = AM Peak Approach Vol

(000) = PM Peak Approach Vol

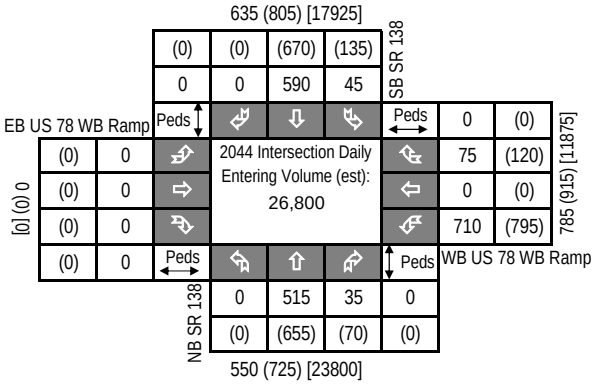
[000] = ADT Volume (Estimate)

Approach Splits: SR 138 - 0.78 / US 78 WB Ramp - 0.22

2024 Opening Year Volumes



2044 Design Year Volumes



Introduction: In 2005, SAFETEA-LU established the Highway Safety Improvement Program (HSIP) and mandated that each state prepare a Strategic Highway Safety Plan (SHSP) to prioritize safety funding investments. Intersections quickly became a common component of most states' SHSP emphasis areas and HSIP project lists, including Georgia's SHSP. Intersection Control Evaluation (ICE) policies and procedures represent a traceable and transparent procedure to streamline the evaluation of intersection control alternatives, and further leverage safety advancements for intersection improvements beyond just the safety program. Approximately one-third of all traffic fatalities and roughly seventy five percent of all traffic crashes in Georgia occur at or adjacent to intersections. Accordingly, the Georgia SHSP includes an emphasis on enhancing intersection safety to advance the *Toward Zero Deaths* vision embraced by the Georgia Governor's Office of Highway Safety (GOHS). This ICE tool was developed to support the ICE policy, developed and adopted to help ensure that intersection investments across the entire Georgia highway system are selected, prioritized and implemented with defensible benefits for safety towards those ends.

Tool Goal: The goal of this ICE tool is to provide a simplified and consistent way of importing traffic, safety, cost, environmental impact and stakeholder posture data to assess and quantify intersection control improvement benefits. The tool supports the ICE policy and procedures to provide traceability, transparency, consistency and accountability when identifying and selecting an intersection control solution that both meets project purpose and reflects overall best value in terms of specific performance-based criteria.

Requirements: An ICE is required for any intersection improvement (e.g. new or modified intersection, widening/reconstruction or corridor project, or work accomplished through a driveway or encroachment permit that affects an intersection) where: 1) the intersection includes at least one roadway designated as a State Route (State Highway System) or as part of the National Highway System; or 2) the intersection will be designed or constructed using State or Federal funding. In certain circumstances where an ICE would otherwise be required, the requirement may be waived based on appropriate evidence presented with a written request. (See the "Waiver" tab to review criteria that may make a project waiver eligible and for instructions to submit a waiver request to the Department). An ICE is not required when the proposed work does not include any changes to the intersection design, involves only routine traffic signal timing and equipment maintenance, or for driveway permits where the driveway is not a new leg to an already existing intersection on either 1) a divided, multi-lane highway with a closed median and only right-in/right-out access or 2) an undivided roadway where the development is not required to construct left and/or right turn lanes (as per the Driveway Manual and District Traffic Engineer).

Two-Stage Process: A complete ICE process consists of two (2) distinct stages, and it is expected that the respective level of effort for completing both stages of ICE will correspond to the magnitude and complexity of the intersection. Prior to starting an ICE, the District Traffic Engineer and/or State Traffic Engineer should be consulted for advice on an appropriate level of effort. The Stage 1 and Stage 2 ICE forms are designed minimize required data inputs using drop-down menu choices and limiting text entry. All fields shaded grey include drop down menu choices and all fields shaded blue require data entry. All other cells in the worksheet are locked.

Stage 1: Screening Decision Record Stage 1 should be conducted early in the project development process and is intended to inform which alternatives are worthy of further evaluation in Stage 2. Stage 1 serves as a screening effort meant to *eliminate* non-competitive options and identify which alternatives merit further considerations based on their practical feasibility. Users should use good engineering judgement in responding to the seven policy questions by selecting "Yes" or "No" in the drop-down boxes. Alternatives should not be summarily eliminated without due consideration, and reasons for eliminating or advancing an alternative should be documented in the "Screening Decision Justification" column.

Stage 2: Alternative Selection Decision Record Stage 2 involves a more detailed and familiar evaluation of the alternatives identified in Stage 1 in order to support the selection of a preferred alternative that may be advanced to detailed design. Stage 2 data entry may require the use of external analysis tools to determine costs, operations and/or safety data that, combined with environmental and stakeholder posture data, form the basis of the ICE evaluation. A separate "CostEst" worksheet tab helps users develop pre-planning-level cost estimates for each Stage 2 alternative evaluated, and a separate Users Guide has been prepared to give guidance on Stage 1 and Stage 2 data entry. Once all data is entered, each alternative is scored and ranked, with the results reported at the bottom of the Stage 2 worksheet to inform on the best of the intersection controls evaluated for project recommendation.

Documentation: A complete ICE document consists of the combination of the outputs from either a completed and signed waiver form or both Stage 1 and Stage 2 worksheets (along with supporting costing and/or environmental documentation), to be included in the approved project Concept Report (or equivalent) or as a stand-alone document.

GDOT ICE STAGE 1: SCREENING DECISION RECORD

ICE Version 2.15 | Revised 07/01/2019

GDOT PI #	0015421
Project Location:	SR 138 @ US 78 WB Ramp
Existing Control:	Signal (turn lanes on mainline)
Prepared by:	SEI
Date:	1/19/2021

Answer "Yes" or "No" to each policy question for each control type to identify which alternatives should be evaluated in the Stage 2 Decision Record; enter justification in the rightmost column

Note: Up to 5 alternatives may be selected and evaluated; Use this ICE Stage 1 to screen 5 or fewer alternatives to evaluate in Stage 2

	Intersection Alternative (see "Intersections" tab for detailed description of intersection/interchange type)	1. Does alternative address the project need in a balanced manner and in scale with the project?	2. Does alternative improve safety performance in terms of reducing severe crashes?	3. Does alternative incorporate safety, convenience and accessibility for pedestrians and/or bicyclists?	4. Does alternative improve (or preserve) traffic operations (congestion, delay, reliability, etc.)?	5. Does alternative appear feasible given the site characteristics, constrains & location context?	6. Does alternative appear feasible with respect to other project factors?	7. Overall feasible alternative (select alternative for further evaluation in Stage 2)?	Screening Decision Justification:
Unsignalized Intersections	Conventional (Minor Stop)	No	No	No	No	No	No	No	Uncapable to handle traffic demands
	Conventional (All-Way Stop)	No	No	No	No	No	No	No	Uncapable to handle traffic demands
	Mini Roundabout	No	No	No	No	No	No	No	Capacity too low
	Single Lane Roundabout	No	Yes	Yes	No	No	No	Yes	
	Multilane Roundabout	No	Yes	Yes	Yes	No	No	Yes	
	RCUT (stop control)	No	No	No	No	No	No	No	No downstream u-turn locations
	RIRO w/down stream U-Turn	No	No	No	No	No	No	No	No downstream u-turn locations
	High-T (unsignalized)	No	No	No	No	No	No	No	Uncapable to handle traffic demands
	Offset-T Intersections	No	No	No	No	No	No	No	3-leg intersection
	Diamond Interch (Stop Control)	No	No	No	No	No	No	No	Already part of an interchange
	Diamond Interch (RAB Control)	No	No	No	No	No	No	No	Already part of an interchange
	No LT Lane Improvements No RT Lane Improvements	No	No	No	No	No	No	No	
	Other unsignalized (provide description):	No	No	No	No	No	No	No	
Signalized Intersections	Traffic Signal	Yes	Yes	Yes	No	Yes	Yes	Yes	
	Median U-Turn (Indirect Left)	No	No	No	No	No	No	No	No downstream u-turn locations
	RCUT (signalized)	No	No	No	No	No	No	No	No downstream u-turn locations
	Displaced Left Turn (CFI)	No	No	No	No	No	No	No	R/W constraints
	Continuous Green-T	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Jughandle	No	No	No	No	No	No	No	R/W constraints
	Quadrant Roadway	No	No	No	No	No	No	No	R/W constraints
	Diamond Interch (Signal Control)	No	No	No	No	No	No	No	Already part of an interchange
	Diverging Diamond	No	No	No	No	No	No	No	Outisde of project scope/demand
	Single Point Interchange	No	No	No	No	No	No	No	Outisde of project scope/demand
	Add one LT Lane on US 78 WB Ramp No RT Lane Improvements	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Other Signalized (provide description):	No	No	No	No	No	No	No	

☐ = Intersection type selected for more detailed analysis in Stage 2 Alternative Selection Decision Record

GDOT ICE STAGE 2: ALTERNATIVE SELECTION DECISION RECORD

ICE Version 2.15 | Revised 07/01/2019

GDOT PI # (or N/A): 0015421 | GDOT District: 1 - Gainesville | Date: 1/19/2021
County: Walton | Area Type: Suburb/Transition | Agency/Firm: SEI
Project Location: SR 138 @ US 78 WB Ramp | Analyst: DGP
Existing Intersection Control: Signal (turn lanes on mainline) | Type of Analysis: Conventional Non-Safety Funded Project

Opening / Design Year Traffic Operations

Intersection meets signal/AWS warrants?	Meets Signal Warrants	
Traffic Analysis Measure of Effectiveness	Intersection Delay	
Traffic Analysis Software Used	Synchro 10	
Analysis Time Period	AM Peak Hr	PM Peak Hr
2024 Opening Yr No-Build Peak Hr Intersection Delay	27.8 sec	35.1 sec
2024 Opening Yr No-Build Peak Hr Intersection V/C	0.82	0.89
2044 Design Yr No-Build Peak Hr Intersection Delay	48.6 sec	70.0 sec
2044 Design Yr No-Build Peak Hr Intersection V/C ratio	0.97	1.05

Complete Streets Warrants Met?
- ☐ PEDESTRIANS
- ☐ BICYCLES
- ☐ TRANSIT

Crash Data: Enter most recent 5 years of crash data (Crash Type)	Crash Severity: PDO	Injury Crash*	Fatal Crash*	
Angle	4	1	0	15%
Head-On	0	0	0	0%
Rear End	23	2	0	74%
Sideswipe - same	0	0	0	0%
Sideswipe - opposite	0	0	0	0%
Not Collision w/Motor Veh	2	2	0	12%
TOTALS:	29	5	0	34

* Number of crashes resulting in injuries / fatalities, not number of persons

Alternatives Analysis:

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Proposed Control Type/Improvement:	Single Lane Roundabout	Multilane Roundabout	Traffic Signal	Continuous Green-T	Add Left Turn Lanes
Project Cost: (From CostEst Worksheet)	*Additional description here*	*Additional description here*	*Additional description here*	*Additional description here*	*Additional description here*
Construction Cost	$852,000	$1,451,000	$170,000	$369,000	$126,000
ROW Cost	$18,000	$75,000	$0	$51,000	$0
Environmental Cost	$0	$0	$0	$0	$0
Reimbursable Utility Cost	$10,000	$43,000	$3,000	$5,000	$1,000
Design & Contingency Cost	$240,000	$409,000	$59,000	$92,000	$31,000
Cost Adjustment (justification req'd)	0%	0%	0%	0%	0%
Total Cost	$1,120,000	$1,978,000	$232,000	$517,000	$158,000
Traffic Operations:					
Traffic Analysis Software Used	GDOT RND Tool 4.1	GDOT RND Tool 4.1	Synchro 10	Synchro 10	Synchro 10
Analysis Period	AM Peak Hr / PM Peak Hr	AM Peak Hr / PM Peak Hr	AM Peak Hr / PM Peak Hr	AM Peak Hr / PM Peak Hr	AM Peak Hr / PM Peak Hr
2044 Design Yr Build Intersection Delay	120.9 sec / 253.6 sec	13.5 sec / 25.5 sec	53.4 sec / 87.2 sec	39.0 sec / 74.2 sec	24.4 sec / 32.9 sec
2044 Design Yr Build Intersection V/C	1.29 / 1.74	0.62 / 0.84	0.96 / 1.23	0.97 / 1.24	0.81 / 0.94
Safety Analysis:					
Predefined CRF: PDO	24%	26%	0%	1%	4%
Predefined CRF: Fatal/Inj	74%	71%	0%	15%	4%
Predefined CRF Source:	FHWA Clearinghouse #s 4192 / 4259	FHWA Clearinghouse #s 4196 / 4195	N/A	FHWA Clearinghouse #s 8655 / 8656	FHWA Clearinghouse #s 270 / 274
User Defined CRF: PDO					
User Defined CRF: Fatal/Inj					
User Defined CRF Source (write in if applicable):					
Environmental Impacts:[1]					
Historic District/Property	None	None	None	None	None
Archaeology Resources	None	None	None	None	None
Graveyard	None	None	None	None	None
Stream	None	None	None	None	None
Underground Tank/Hazmat	None	None	None	None	None
Park Land	None	None	None	None	None
EJ Community	None	None	None	None	None
Wooded Area	None	None	None	None	None
Wetland	None	None	None	None	None

*Note: If environmental impact is significant (**RED**), provide justification impact won't jeopardize project delivery using "Env" worksheet*
[1] Environmental impacts are only preliminary estimates; detailed environmental impact documentation will be included with project concept report

Stakeholder Posture:

Local Community Support	Unknown	Unknown	Unknown	Unknown	Unknown
GDOT Support	Unknown	Unknown	Unknown	Unknown	Unknown
Final ICE Stage 2 Score:	2.0	4.9	3.3	3.7	4.7
Rank of Control Type Alternatives:	5	1	4	3	2

Note: Stage 2 score is not given (shown as "-") if signal or AWS is selected as control type but respective warrants are not met

Provide additional comments and/or explain any unique analysis inputs, or results (as necessary):

GDOT INTERSECTION CONTROL EVALUATION (ICE) WAIVER FORM

ICE Version 2.15 | Revised 07/01/2019

Waiver Request - Level 1

In certain circumstances where an ICE would otherwise be required, an ICE may be waived based on appropriate evidence presented with a written request. Scenarios in which an ICE waiver request may be considered include:

1. Proposed improvements do not substantially alter the character of the intersection, and are considered minor in nature, such as extending existing turn lane(s) or modifying signal phasing at an existing traffic signal
2. The intersection consists of a public roadway intersecting a divided, multilane roadway where the access will be limited to a closed median with only right-in/right-out access that will operate acceptably; or
3. The intersection is along an undivided, two-lane roadway that will not be widened and meets the following criteria:
   - Low risk in terms of exposure (total intersection entering volume less than 1,000 vehicles /day)
   - Latest 5 years of crash history is not indicative of a crash problem (no discernible crash patterns coupled with low crash frequency and severity)
   - Layout has no unusual or undesirable geometric features (such as restricted sight distance)
   - The proposed changes are not expected to adversely affect safety

If only one alternative is determined to be feasible from the ICE Stage 1, then a waiver may be submitted in lieu of completing ICE Stage 2. The waiver must clearly explain why there is no other feasible alternative. A Waiver Form should also be submitted to document an agreed upon decision to select a preferred alternative other than the highest scoring alternative in Stage 2.

ICE waiver forms with supporting documentation should be submitted for approval to the Office of Traffic Operations or District Engineer (depending on Waiver level). Questions regarding the waiver process should be routed to the State Traffic Engineer.

Project Information:

Location:	SR 138 @ US 78 WB Ramp	GDOT PI # (or N/A):	0015421
County:	Walton	Requested By:	0
GDOT District:	1 - Gainesville	Prepared By:	SEI
Area Type:	Suburb/Transition	Analyst:	DGP
Existing Intersection Control:	Signal (turn lanes on mainline)	Date:	1/19/2021
		Waiver Request Type:	GDOT PDP Project

Traffic and Operations Data:[1]

Intersection meets signal/AWS warrants?	Meets Signal Warrants	
Traffic Analysis Type:	Intersection Delay	
Existing Avg Daily Traffic (Major Street):	8,100	
Existing Avg Daily Traffic (Minor Street):	5,925	
Analysis Period:	AM Peak	PM Peak
2024 Opening Yr Peak Hour Intersection Delay:	18.6 sec	22.1 sec
2024 Opening Yr Peak Hour Intersection V/C:	0.71	0.83
2044 Design Yr Peak Hour Intersection Delay:	24.4 sec	32.9 sec
2044 Design Yr Peak Hour Intersection V/C:	0.81	0.94

[1]Crash data required for all existing intersections. ADT's required if available (from data collected or nearest GDOT count station site). Capacity data is optional unless needed to justify basis of the waiver request.

Crash Data (Required):[1]

Crash Data: Enter most recent 5 years of crash data	Crash Severity			
	PDO	Injury Crash*	Fatal Crash*	
Crash Type: Angle	4	1	0	<-
Head-On	0	0	0	
Rear End	23	2	0	
Sideswipe - same	0	0	0	
Sideswipe - opposite	0	0	0	
Not Collision w/Motor Veh	2	2	0	
TOTALS:	29	5	0	

* Number of crashes resulting in injuries / fatalities, not number of persons

Description of Work / Justification for Waiver (Required):	A traffic signal is the recommended intersection control. A traffic signal is the existing control and operational and capacity improvements can be gained by adding lanes. This alternative minimizes ROW acquisition and addresses the project need in a balanced manner. A multi-lane roundabout scored highest but the limited ROW, nearby power easement, and adjacent bridge piers may make the alternative infeasible.
Proposed Intersection Control:	Add Turn Ln/Median (Signal)

REQUESTED BY: Chris Maddox Date: 3/23/2021

Title: Traffic Engineering Division Manager

APPROVED BY: Christopher Raymond Date: 2021.03.29 10:52:34-04'00' Date:

Name:

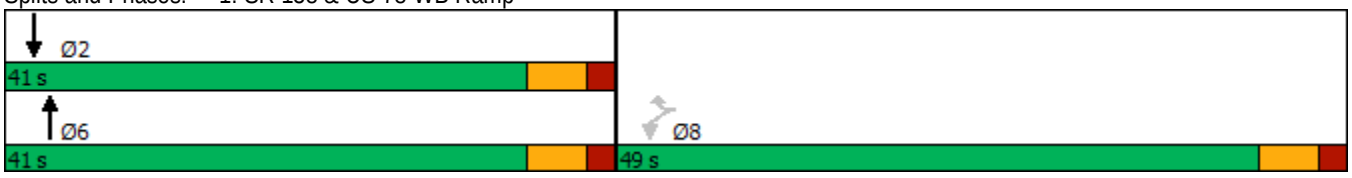
Chief Engineer or (Approved Delegate)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	540	65	405	0	0	465
Future Volume (vph)	540	65	405	0	0	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		0	0	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1597	1429	1759	0	0	1792
Flt Permitted	0.950					
Satd. Flow (perm)	1597	1429	1759	0	0	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		71				
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	587	71	440	0	0	505
Shared Lane Traffic (%)						
Lane Group Flow (vph)	587	71	440	0	0	505
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1			1
Detector Template						
Leading Detector (ft)	40	40	336			336
Trailing Detector (ft)	0	0	330			330
Detector 1 Position(ft)	0	0	330			330
Detector 1 Size(ft)	40	40	6			6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Turn Type	Perm	Perm	NA			NA
Protected Phases			6			2
Permitted Phases	8	8				
Detector Phase	8	8	6			2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0			12.0
Minimum Split (s)	24.0	24.0	24.0			24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	49.0	49.0	41.0			41.0
Total Split (%)	54.4%	54.4%	45.6%			45.6%
Maximum Green (s)	43.0	43.0	35.0			35.0
Yellow Time (s)	4.0	4.0	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Min			Min
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	29.3	29.3	22.4			22.4
Actuated g/C Ratio	0.45	0.45	0.35			0.35
v/c Ratio	0.81	0.10	0.72			0.82
Control Delay	26.8	3.8	27.6			32.5
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	26.8	3.8	27.6			32.5
LOS	C	A	C			C
Approach Delay	24.4		27.6			32.5
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp

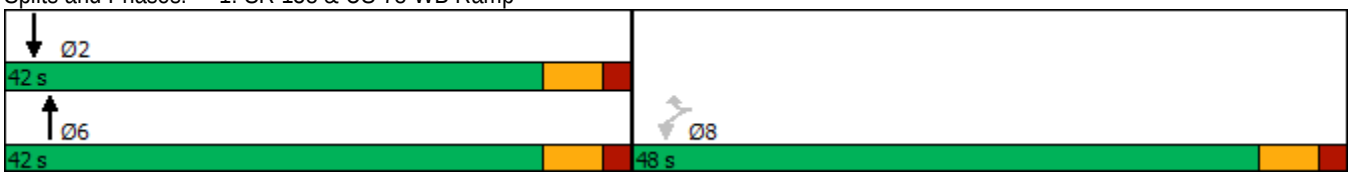


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	115	525	0	0	555
Future Volume (vph)	605	115	525	0	0	555
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		0	0	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1626	1455	1792	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1455	1792	0	0	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		125				
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	658	125	571	0	0	603
Shared Lane Traffic (%)						
Lane Group Flow (vph)	658	125	571	0	0	603
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1			1
Detector Template						
Leading Detector (ft)	40	40	336			336
Trailing Detector (ft)	0	0	330			330
Detector 1 Position(ft)	0	0	330			330
Detector 1 Size(ft)	40	40	6			6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Turn Type	Perm	Perm	NA			NA
Protected Phases			6			2
Permitted Phases	8	8				
Detector Phase	8	8	6			2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0			12.0
Minimum Split (s)	24.0	24.0	24.0			24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	48.0	48.0	42.0			42.0
Total Split (%)	53.3%	53.3%	46.7%			46.7%
Maximum Green (s)	42.0	42.0	36.0			36.0
Yellow Time (s)	4.0	4.0	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Min			Min
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	35.0	35.0	27.8			27.8
Actuated g/C Ratio	0.46	0.46	0.37			0.37
v/c Ratio	0.87	0.17	0.87			0.89
Control Delay	34.1	3.5	38.1			40.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.1	3.5	38.1			40.0
LOS	C	A	D			D
Approach Delay	29.2		38.1			40.0
Approach LOS	C		D			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.5			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 35.1		Intersection LOS: D	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp

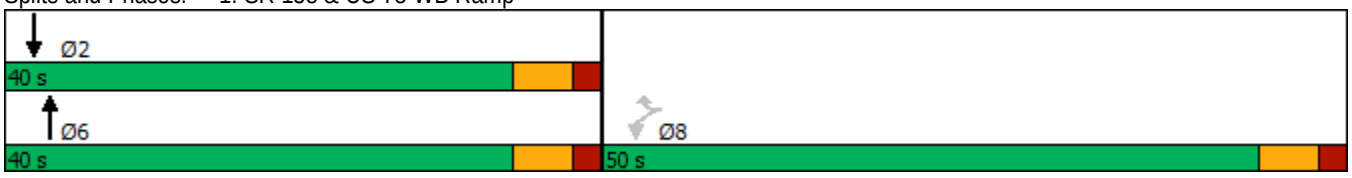


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	710	75	515	0	0	590
Future Volume (vph)	710	75	515	0	0	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		0	0	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1597	1429	1759	0	0	1792
Flt Permitted	0.950					
Satd. Flow (perm)	1597	1429	1759	0	0	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82				
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	772	82	560	0	0	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	82	560	0	0	641
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1			1
Detector Template						
Leading Detector (ft)	40	40	336			336
Trailing Detector (ft)	0	0	330			330
Detector 1 Position(ft)	0	0	330			330
Detector 1 Size(ft)	40	40	6			6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Turn Type	Perm	Perm	NA			NA
Protected Phases			6			2
Permitted Phases	8	8				
Detector Phase	8	8	6			2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0			12.0
Minimum Split (s)	24.0	24.0	24.0			24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	50.0	50.0	40.0			40.0
Total Split (%)	55.6%	55.6%	44.4%			44.4%
Maximum Green (s)	44.0	44.0	34.0			34.0
Yellow Time (s)	4.0	4.0	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Min			Min
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	44.0	44.0	32.6			32.6
Actuated g/C Ratio	0.50	0.50	0.37			0.37
v/c Ratio	0.97	0.11	0.87			0.97
Control Delay	50.5	3.4	41.6			58.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	50.5	3.4	41.6			58.2
LOS	D	A	D			E
Approach Delay	46.0		41.6			58.2
Approach LOS	D		D			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 88.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 48.6		Intersection LOS: D	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp

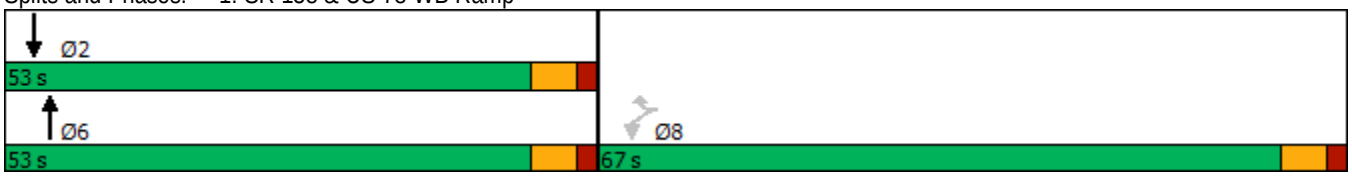


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	795	120	655	0	0	670
Future Volume (vph)	795	120	655	0	0	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		0	0	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					
Satd. Flow (prot)	1626	1455	1792	0	0	1845
Flt Permitted	0.950					
Satd. Flow (perm)	1626	1455	1792	0	0	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		98				
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	864	130	712	0	0	728
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	130	712	0	0	728
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1			1
Detector Template						
Leading Detector (ft)	40	40	336			336
Trailing Detector (ft)	0	0	330			330
Detector 1 Position(ft)	0	0	330			330
Detector 1 Size(ft)	40	40	6			6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0	0.0			0.0
Turn Type	Perm	Perm	NA			NA
Protected Phases			6			2
Permitted Phases	8	8				
Detector Phase	8	8	6			2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0			12.0
Minimum Split (s)	24.0	24.0	24.0			24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	67.0	67.0	53.0			53.0
Total Split (%)	55.8%	55.8%	44.2%			44.2%
Maximum Green (s)	61.0	61.0	47.0			47.0
Yellow Time (s)	4.0	4.0	4.0			4.0
All-Red Time (s)	2.0	2.0	2.0			2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.0	6.0	6.0			6.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Recall Mode	None	None	Min			Min
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	11.0	11.0	11.0			11.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	61.0	61.0	47.0			47.0
Actuated g/C Ratio	0.51	0.51	0.39			0.39
v/c Ratio	1.05	0.17	1.02			1.01
Control Delay	73.9	5.4	74.7			72.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	73.9	5.4	74.7			72.4
LOS	E	A	E			E
Approach Delay	64.9		74.7			72.4
Approach LOS	E		E			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay: 70.0		Intersection LOS: E	
Intersection Capacity Utilization 89.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp



Roundabout Analysis Tool

v 4.2
12/24/19

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Analyst:	DGP
Agency/Company:	SEI
Date:	1/19/2021
Project Name or PI#:	0015421
Year, Peak Period:	2044 AM
County/District:	Walton
Intersection:	SR 138 @ US 78 WB Ramp

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000	No	less than 90%	Yes
Single Lane	less than 25,000	No	less than 90%	Yes
Multi-Lane	less than 45,000	Yes	less than 90%	Yes

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	17,350	65%
Minor Street	9,450	35%
Total volumes	26,800	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi 4000 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

GDOT
Georgia Department of Transportation

Proposed Design Configuration Chart

Directions for this Section only: *(see Instructions Tab for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Multi-Lane
# of Approaches:	3
Name of Streets:	SR 138
	SR 138
	US 78 WB Ramp

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

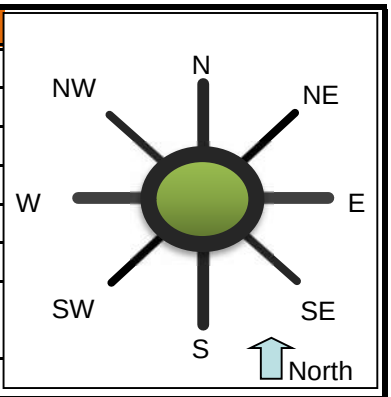
Approach Leg Characteristics:

	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	SR 138		US 78 WB Ramp	
Entry Lane Config				
Bypass to Adj Leg?				
	South Leg (5)	**SW Leg (6)**	**West Leg (7)**	**NW Leg (8)**
Street Name:	SR 138			
Entry Lane Config				
Bypass to Adj Leg?				

General & Site Information

v 4.2

Analyst:	DGP
Agency/Co:	SEI
Date:	1/19/2021
Project or PI#:	0015421
Year, Peak Hour:	2044 AM
County/District:	Walton
Intersection Name:	SR 138 @ US 78 WB Ramp



Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			75		515			
Exit	NE (2), vph								
Legs	E (3), vph	45				35			
(TO)	SE (4), vph								
	S (5), vph	590		710					
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
Output	Total Vehicles	635	0	785	0	550	0	0	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	94.0%	100.0%	87.0%	100.0%	92.5%	100.0%	100.0%	100.0%
% Heavy Vehicles	6.0%	0.0%	13.0%	0.0%	7.5%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.95*	*0.92*	*0.95*	*0.92*	*0.95*	*0.95*	*0.95*
F_{HV}	0.943	1.000	0.885	1.000	0.930	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	92	0	602	0	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	52	0	0	0	41	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	680	0	872	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	0	0	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	732	0	964	0	643	0	0	0
Conflicting flow, pcu/h	872	0	602	0	52	0	0	0

Results: Approach Measures of Effectiveness

HCM 6th Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	535	NA	661	NA	1218	NA	NA	NA
Entry Flow Rates, vph	690	0	853	0	598	0	0	0
V/C ratio	1.29		1.29		0.49			
Control Delay, sec/pcu	167.5		162.1		8.2			
LOS	F		F		A			
Average Queue (ft)	803		961		34			
95th % Queue (ft)	755		948		75			

Overall Intersection Measures of Effectiveness

Int Control Delay (sec)	120.9	Int LOS	F	Max Approach V/C	1.29

Notes: v 4.2

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 6th Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (veh)						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Roundabout Analysis Tool

v 4.2
12/24/19

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Analyst:	DGP
Agency/Company:	SEI
Date:	1/19/2021
Project Name or PI#:	0015421
Year, Peak Period:	2044 PM
County/District:	Walton
Intersection:	SR 138 @ US 78 WB Ramp

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

Roundabouts may not operate well if there is too much traffic entering the intersection or if the percentage of traffic on the major road is too high. Candidate intersections shall be analyzed to determine whether a roundabout will perform acceptably. Shown below are planning level thresholds. A capacity analysis should be performed to determine lane configuration based on traffic volumes.

# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000	No	less than 90%	Yes
Single Lane	less than 25,000	No	less than 90%	Yes
Multi-Lane	less than 45,000	Yes	less than 90%	Yes

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	17,350	65%
Minor Street	9,450	35%
Total volumes	26,800	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi 4000 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

GDOT
Georgia Department of Transportation

Proposed Design Configuration Chart

Directions for this Section only: *(see Instructions Tab for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Multi-Lane
# of Approaches:	3
Name of Streets:	SR 138
	SR 138
	US 78 WB Ramp

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

Approach Leg Characteristics:

	North Leg (1)		NE Leg (2)		East Leg (3)		SE Leg (4)	
Street Name:	SR 138				US 78 WB Ramp			
Entry Lane Config								
Bypass to Adj Leg?								
	South Leg (5)		SW Leg (6)		West Leg (7)		NW Leg (8)	
Street Name:	SR 138							
Entry Lane Config								
Bypass to Adj Leg?								

General & Site Information

v 4.2

Analyst:	DGP
Agency/Co:	SEI
Date:	1/19/2021
Project or PI#:	0015421
Year, Peak Hour:	2044 PM
County/District:	Walton
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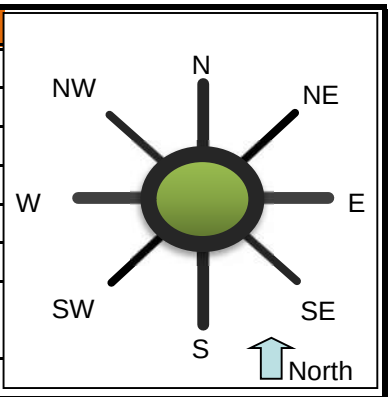

Volumes		Entry Legs (FROM) N (1)	NE (2)	E (3)	SE (4)	S (5)	SW (6)	W (7)	NW (8)
	N (1), vph			120		655			
Exit	NE (2), vph								
Legs	E (3), vph	135				70			
(TO)	SE (4), vph								
	S (5), vph	670		795					
	SW (6), vph								
	W (7), vph								
	NW (8), vph								
Output	Total Vehicles	805	0	915	0	725	0	0	0

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	97.0%	100.0%	89.0%	100.0%	94.5%	100.0%	100.0%	100.0%
% Heavy Vehicles	3.0%	0.0%	11.0%	0.0%	5.5%	0.0%	0.0%	0.0%
% Bicycle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.95*	*0.92*	*0.95*	*0.92*	*0.95*	*0.95*	*0.95*
F_{HV}	0.971	1.000	0.901	1.000	0.948	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows	N	NE	E	SE	S	SW	W	NW
Flow to Leg # N (1), pcu/h	0	0	145	0	751	0	0	0
NE (2), pcu/h	0	0	0	0	0	0	0	0
E (3), pcu/h	151	0	0	0	80	0	0	0
SE (4), pcu/h	0	0	0	0	0	0	0	0
S (5), pcu/h	750	0	959	0	0	0	0	0
SW (6), pcu/h	0	0	0	0	0	0	0	0
W (7), pcu/h	0	0	0	0	0	0	0	0
NW (8), pcu/h	0	0	0	0	0	0	0	0
Entry flow, pcu/h	901	0	1104	0	831	0	0	0
Conflicting flow, pcu/h	959	0	751	0	151	0	0	0

Results: Approach Measures of Effectiveness

HCM 6th Edition	N	NE	E	SE	S	SW	W	NW
Entry Capacity, vph	504	NA	578	NA	1121	NA	NA	NA
Entry Flow Rates, vph	875	0	995	0	788	0	0	0
V/C ratio	1.74		1.72		0.70			
Control Delay, sec/pcu	360.0		350.0		13.9			
LOS	F		F		B			
Average Queue (ft)	2187		2417		76			
95th % Queue (ft)	1356		1622		163			

Overall Intersection Measures of Effectiveness

Int Control Delay (sec)	253.6	Int LOS	F	Max Approach V/C	1.74

Notes: v 4.2

Unit Legend:
vph = vehicles per hour
PHF = peak hour factor
F_{HV} = heavy vehicle factor
pcu = passenger car unit

Bypass Lane Merge Point Analysis (if applicable)

Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
Volumes						
Right Turn Volume removed from Entry Leg						
Volume Characteristics (for entry leg)						
PHF						
F_{HV}						
F_{ped}						
NOTE: Volume Characteristics for Exit Leg are already taken into account						
Entry/Conflicting Flows						
Entry Flow, pcu/hr						
Conflicting Flow, pcu/hr						
Bypass Lane Results (HCM 6th Edition)						
Entry Capacity of Bypass, vph						
Flow Rates of Exiting Traffic, vph						
V/C ratio						
Control Delay, s/veh						
LOS						
95th % Queue (veh)						
95th % Queue (ft)						
Approach w/Bypass Delay, s/veh						
Approach w/Bypass LOS						

Roundabout Analysis Tool

v 4.2
12/24/19

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Roundabout Considerations Worksheet

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# of circulatory lanes	ADTs (current/ build year)	Condition met?	% traffic on Major Road	Condition met?
Mini	less than 15,000	No	less than 90%	Yes
Single Lane	less than 25,000	No	less than 90%	Yes
Multi-Lane	less than 45,000	Yes	less than 90%	Yes

Other things to consider when evaluating roundabouts as an alternative are Right of Way, sight distance, environmental impacts, and access to adjacent properties.

Volume Information (for Analysis Time Period)

1 Enter the Major/Minor Street ADT Volumes in the Chart below:

	Volumes	Split
Major Street	17,350	65%
Minor Street	9,450	35%
Total volumes	26,800	

Proximity to Other Intersections

2 How close is the nearest signal (miles or feet)? 0 mi 4000 '

3 Is the proposed intersection located within a coordinated signal network? No

Go up to next section...

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Proposed Design Configuration Chart

Directions for this Section only: *(see Instructions Tab for other sections)*

1. Select the type of roundabout you are analyzing.
2. Key in the number of approaches and the street names at the proposed intersections.
3. Complete the Approach Characteristics Chart:
   a. Select the Street Name from the pulldown menu for each approach leg
   b. Select the Lane Type for each entry apporach lane
      **The first box is the inner lane, the second box is the outer lane*
   c. Select Yes or No if a right turn bypass will be added to each approach leg

Roundabout Characteristics

Roundabout Type:	Multi-Lane
# of Approaches:	3
Name of Streets:	SR 138
	SR 138
	US 78 WB Ramp

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

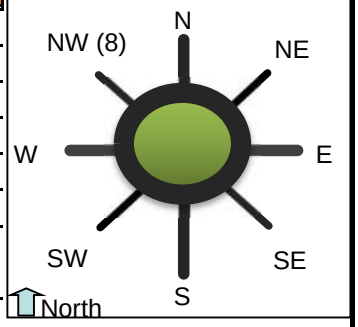
Approach Leg Characteristics:

	North Leg (1)	NE Leg (2)	East Leg (3)	SE Leg (4)
Street Name:	SR 138		US 78 WB Ramp	
Entry Lane Config				
Bypass to Adj Leg?				
	South Leg (5)	**SW Leg (6)**	**West Leg (7)**	**NW Leg (8)**
Street Name:	SR 138			
Entry Lane Config				
Bypass to Adj Leg?				

General & Site Information

v 4.2

Analyst:	DGP
Agency/Co:	SEI
Date:	1/19/2021
Project or PI#:	0015421
Year, Peak Hour:	2044 AM
County/District:	Walton
Intersection:	SR 138 @ US 78 WB Ramp



Volumes

Volumes	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Thru	SELECT	SELECT	Left Only	Lf-Th-Rt	SELECT	SELECT
N (1), vph						75		
Exit NE (2), vph								
Legs E (3), vph	45							
(TO) SE (4), vph								
S (5), vph	253	337			416	294		
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	298	337	0	0	416	369	0	0

	S1 (5)	S2 (5)	SW1 (6)	SW2 (6)	W1 (7)	W2 (7)	NW1 (8)	NW2 (8)
Lane Designation	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	515							
NE (2), vph								
E (3), vph	35							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	550	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	1	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	94.0%	100.0%	87.0%	100.0%	92.5%	100.0%	100.0%	100.0%
% Heavy Vehicles	6.0%	0.0%	13.0%	0.0%	7.5%	0.0%	0.0%	0.0%
% Bicycles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.95*	*0.92*	*0.95*	*0.92*	*0.95*	*0.95*	*0.95*
F_{hv}	0.943	1.000	0.885	1.000	0.930	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	92	0	602	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	52	0	0	0	41	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	680	0	872	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	732	0	964	0	643	0	0	0
	Entry flow Lane 1, pcu/h	343	0	511	0	643	0	0	0
	Entry flow Lane 2, pcu/h	388	0	453	0	0	0	0	0
	Conflicting flow, pcu/h	872	0	602	0	52	0	0	0

Results: Approach Measures of Effectiveness

HCM 6th Edition	N		E		S		W	
Lane Designations	*Left-Thru*	*Thru*	*Left Only*	*Lf-Th-Rt*	*Right-Thru*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	571	638	727	727	1218	NA	NA	NA
Entry Flow Rates, veh/h	324	366	452	401	598	0	0	0
V/C ratio	0.57	0.57	0.62	0.55	0.49	0.00		
Control Delay, s/veh	17.1	15.8	15.9	13.6	8.2	0.0		
LOS	C	C	C	B	A	#N/A		
Average Queue (ft)	38	40	50	38	34	0		
95th % Queue (ft)	94	97	124	96	75	#VALUE!		
Approach Delay, LOS	16.4 sec, LOS C		14.8 sec, LOS B		8.2 sec, LOS A			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	0	0	0	0	0	0	0	0
V/C ratio			0.00	0.00			0.00	0.00
Control Delay, sec/pcu			0.0	0.0			0.0	0.0
LOS			#N/A	#N/A			#N/A	#N/A
Average Queue (ft)			0	0			0	0
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#DIV/0!				#DIV/0!	

Overall Intersection Measures of Effectiveness

Int Control Delay (sec)	13.5	Int LOS	B	Max Approach V/C	0.62

Notes: v 4.2

Bypass Lane Merge Point Analysis (if applicable)						
Bypass Characteristics	**Bypass #1**	**Bypass #2**	**Bypass #3**	**Bypass #4**	**Bypass #5**	**Bypass #6**
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	2	2	2	2	2	2
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: *(Select Input Method)*						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
****Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.*						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th Percentile Queue (veh)						
95th % Queue (ft)						

Roundabout Analysis Tool

v 4.2
12/24/19

Welcome to GDOT's Roundabout Analysis Tool. This tool is designed for the user to determine the functionality of a proposed roundabout. The analysis is based on the Highway Capacity Manual 2010 Edition and 6th Edition Methodologies, NCHRP Report 672, and FHWA's Roundabout Informational Guide. Please read the notes in the Instructions tab before using the spreadsheet.

Analyst:	DGP
Agency/Company:	SEI
Date:	1/19/2021
Project Name or PI#:	0015421
Year, Peak Period:	2044 PM
County/District:	Walton
Intersection:	SR 138 @ US 78 WB Ramp

Insert Project Information Here in the BLUE SPACE. This information is linked to the Mini, Single Lane and Multi Lane Worksheets.

Roundabout Considerations Worksheet

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Georgia Department of Transportation

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Roundabout Characteristics

Roundabout Type:	Multi-Lane
# of Approaches:	3
Name of Streets:	SR 138
	SR 138
	US 78 WB Ramp

Chart Key:

Mini/Single Lane	Street Name	
	All	
	Bypass?	
Multi-lane	Street Name	
	Inner Ln	Outer Ln
	Bypass?	

Approach Leg Characteristics:

	North Leg (1)		NE Leg (2)		East Leg (3)		SE Leg (4)	
Street Name:	SR 138				US 78 WB Ramp			
Entry Lane Config								
Bypass to Adj Leg?								
	South Leg (5)		SW Leg (6)		West Leg (7)		NW Leg (8)	
Street Name:	SR 138							
Entry Lane Config								
Bypass to Adj Leg?								

General & Site Information

v 4.2

Analyst:	DGP
Agency/Co:	SEI
Date:	1/19/2021
Project or PI#:	0015421
Year, Peak Hour:	2044 PM
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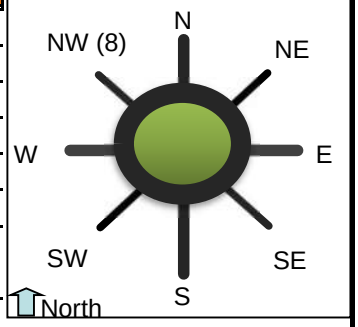


Volumes

Volumes	Entry Legs (FROM)							
	N1 (1)	N2 (1)	NE1 (2)	NE2 (2)	E1 (3)	E2 (3)	SE1 (4)	SE2 (4)
Lane Designation	Left-Thru	Thru	SELECT	SELECT	Left Only	Lf-Th-Rt	SELECT	SELECT
N (1), vph						120		
Exit NE (2), vph								
Legs E (3), vph	135							
(TO) SE (4), vph								
S (5), vph	243	427			485	310		
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	378	427	0	0	485	430	0	0
	S1 (5)	**S2 (5)**	**SW1 (6)**	**SW2 (6)**	**W1 (7)**	**W2 (7)**	**NW1 (8)**	**NW2 (8)**
Lane Designation	Right-Thru	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT
N (1), vph	655							
NE (2), vph								
E (3), vph	70							
SE (4), vph								
S (5), vph								
SW (6), vph								
W (7), vph								
NW (8), vph								
Entry Volume, vph	725	0	0	0	0	0	0	0

	N	NE	E	SE	S	SW	W	NW
# of Entry Flow Lanes	2	0	2	0	1	0	0	0
# of Conflict Flow Lanes	**2**	**2**	**1**	**2**	**1**	**2**	**2**	**2**

Volume Characteristics	N	NE	E	SE	S	SW	W	NW
% Cars	94.0%	100.0%	87.0%	100.0%	92.5%	100.0%	100.0%	100.0%
% Heavy Vehicles	6.0%	0.0%	13.0%	0.0%	7.5%	0.0%	0.0%	0.0%
% Bicycles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# of Pedestrians (ped/hr)	0	0	0	0	0	0	0	0
PHF	*0.92*	*0.95*	*0.92*	*0.95*	*0.92*	*0.95*	*0.95*	*0.95*
F_{hv}	0.943	1.000	0.885	1.000	0.930	1.000	1.000	1.000
F_{ped}	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Entry/Conflicting Flows		N	NE	E	SE	S	SW	W	NW
Flow to	N (1), pcu/h	0	0	147	0	765	0	0	0
Leg #	NE (2), pcu/h	0	0	0	0	0	0	0	0
	E (3), pcu/h	156	0	0	0	82	0	0	0
	SE (4), pcu/h	0	0	0	0	0	0	0	0
	S (5), pcu/h	772	0	976	0	0	0	0	0
	SW (6), pcu/h	0	0	0	0	0	0	0	0
	W (7), pcu/h	0	0	0	0	0	0	0	0
	NW (8), pcu/h	0	0	0	0	0	0	0	0
	Entry flow, pcu/h	928	0	1124	0	847	0	0	0
	Entry flow Lane 1, pcu/h	436	0	596	0	847	0	0	0
	Entry flow Lane 2, pcu/h	492	0	528	0	0	0	0	0
	Conflicting flow, pcu/h	976	0	765	0	156	0	0	0

Results: Approach Measures of Effectiveness

HCM 6th Edition	N		E		S		W	
Lane Designations	*Left-Thru*	*Thru*	*Left Only*	*Lf-Th-Rt*	*Right-Thru*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	519	584	626	626	1095	NA	NA	NA
Entry Flow Rates, veh/h	411	464	527	467	788	0	0	0
V/C ratio	0.79	0.79	0.84	0.75	0.72	0.00		
Control Delay, s/veh	32.4	29.8	33.1	24.4	14.8	0.0		
LOS	D	D	D	C	B	#N/A		
Average Queue (ft)	92	96	121	79	81	0		
95th % Queue (ft)	196	203	259	187	177	#VALUE!		
Approach Delay, LOS	31 sec, LOS D		29 sec, LOS D		14.8 sec, LOS B			

	NE		SE		SW		NW	
Lane Designations	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*	*Lane 1*	*Lane 2*
Entry Capacity, veh/h	NA	NA	NA	NA	NA	NA	NA	NA
Entry Flow Rates, veh/h	0	0	0	0	0	0	0	0
V/C ratio			0.00	0.00			0.00	0.00
Control Delay, sec/pcu			0.0	0.0			0.0	0.0
LOS			#N/A	#N/A			#N/A	#N/A
Average Queue (ft)			0	0			0	0
95th % Queue (ft)			#VALUE!	#VALUE!			#VALUE!	#VALUE!
Approach Delay, LOS			#DIV/0!				#DIV/0!	

Overall Intersection Measures of Effectiveness

Int Control Delay (sec)	25.5	Int LOS	D	Max Approach V/C	0.84

Notes: v 4.2

Bypass Lane Merge Point Analysis (if applicable)

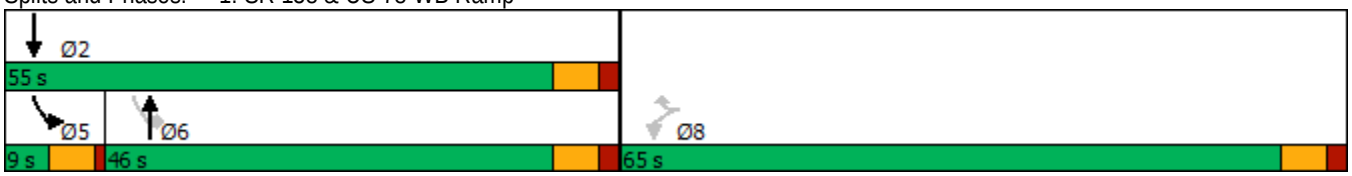
Bypass Characteristics	Bypass #1	Bypass #2	Bypass #3	Bypass #4	Bypass #5	Bypass #6
Select Entry Leg from Bypass (FROM)						
Select Exit Leg for Bypass (TO)						
Does the bypass have a dedicated receiving lane?						
# of Conflicting Exit Flow Lanes	2	2	2	2	2	2
Volumes						
Entry Leg: Insert Right Turn Volume						
Exit Leg: *(Select Input Method)*						
*Lane Flow in Exit Leg****						
Sum of inner circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
Sum of outer circulatory flow lane to exit leg (leg bypass merges into)	N/A	N/A	N/A	N/A	N/A	N/A
*Critical Lane Flow (Manual) in Exit Leg****						
Volume Characteristics						
PHF (Entry Leg)						
F_{HV} (Entry Leg)						
F_{ped}						
PHF (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
F_{HV} (Exit Leg)***	N/A	N/A	N/A	N/A	N/A	N/A
****Volume Characteristics are already taken into account for Default method ONLY. Insert Values above if Manual method.*						
Entry/Conflicting Flows						
Entry Flow						
Conflicting Critical Flow						
Bypass Lane Results						
Entry Capacity of Bypass, veh/h						
Flow Rates of Exiting Traffic, veh/h						
V/C ratio						
Control Delay, sec/pcu						
LOS						
95th Percentile Queue (veh)						
95th % Queue (ft)						

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	710	75	515	35	45	590
Future Volume (vph)	710	75	515	35	45	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1597	1429	1759	1495	1703	1792
Flt Permitted	0.950				0.109	
Satd. Flow (perm)	1597	1429	1759	1495	195	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		81		34		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	772	82	560	38	49	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	82	560	38	49	641
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	65.0	65.0	46.0	46.0	9.0	55.0
Total Split (%)	54.2%	54.2%	38.3%	38.3%	7.5%	45.8%
Maximum Green (s)	59.0	59.0	40.0	40.0	4.0	49.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	57.3	57.3	38.0	38.0	42.1	44.9
Actuated g/C Ratio	0.50	0.50	0.33	0.33	0.37	0.39
v/c Ratio	0.96	0.11	0.96	0.07	0.39	0.91
Control Delay	54.0	4.0	66.7	10.5	30.7	51.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	4.0	66.7	10.5	30.7	51.6
LOS	D	A	E	B	C	D
Approach Delay	49.2		63.2			50.1
Approach LOS	D		E			D

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 114.3			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 53.4		Intersection LOS: D	
Intersection Capacity Utilization 83.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp

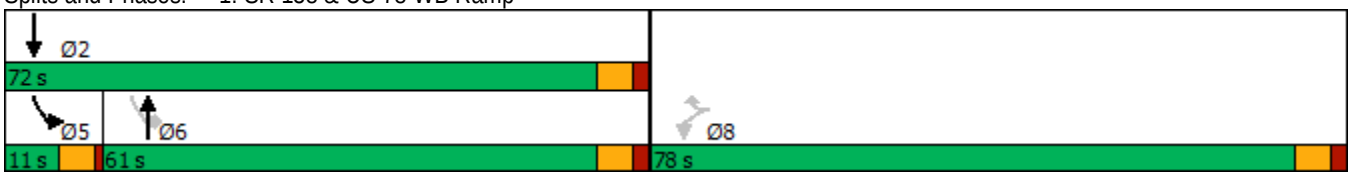


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	795	120	655	70	135	670
Future Volume (vph)	795	120	655	70	135	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1455	1792	1524	1752	1845
Flt Permitted	0.950				0.073	
Satd. Flow (perm)	1626	1455	1792	1524	135	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		90		44		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	864	130	712	76	147	728
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	130	712	76	147	728
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	78.0	78.0	61.0	61.0	11.0	72.0
Total Split (%)	52.0%	52.0%	40.7%	40.7%	7.3%	48.0%
Maximum Green (s)	72.0	72.0	55.0	55.0	6.0	66.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	72.0	72.0	55.0	55.0	62.0	66.0
Actuated g/C Ratio	0.48	0.48	0.37	0.37	0.41	0.44
v/c Ratio	1.11	0.17	1.08	0.13	1.23	0.90
Control Delay	102.8	8.2	104.4	15.6	182.7	54.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.8	8.2	104.4	15.6	182.7	54.1
LOS	F	A	F	B	F	D
Approach Delay	90.4		95.8			75.7
Approach LOS	F		F			E

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay: 87.2		Intersection LOS: F	
Intersection Capacity Utilization 100.2%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp



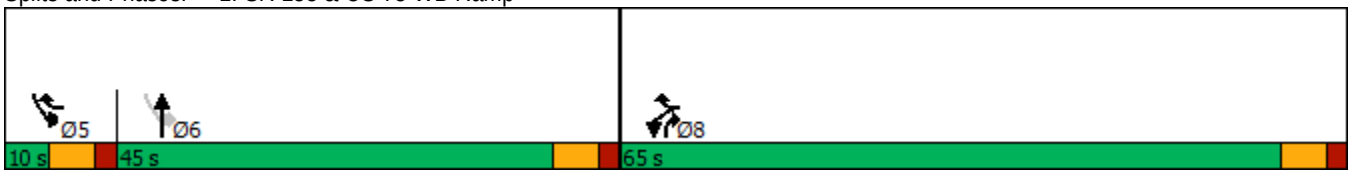
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	710	75	515	35	45	590
Future Volume (vph)	710	75	515	35	45	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1597	1429	1759	1495	1703	1792
Flt Permitted	0.950				0.105	
Satd. Flow (perm)	1597	1429	1759	1495	188	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82		38		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	772	82	560	38	49	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	82	560	38	49	641
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	18		12			18
Link Offset(ft)	0		8			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	pt+ov	NA	pm+ov	D.P+P	NA
Protected Phases	8!	8 5	6	8	5	Free!
Permitted Phases				6	6	
Detector Phase	8	8 5	6	8	5	
Switch Phase						
Minimum Initial (s)	8.0		12.0	8.0	4.0	
Minimum Split (s)	24.0		24.0	24.0	10.0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	65.0		45.0	65.0	10.0	
Total Split (%)	54.2%		37.5%	54.2%	8.3%	
Maximum Green (s)	59.0		39.0	59.0	4.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Min	None	None	
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	11.0		11.0	11.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)	57.6	67.7	38.1	103.2	41.2	115.5
Actuated g/C Ratio	0.50	0.59	0.33	0.89	0.36	1.00
v/c Ratio	0.97	0.09	0.97	0.03	0.41	0.36
Control Delay	55.0	2.7	69.4	0.4	32.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	2.7	69.4	0.4	32.7	0.6
LOS	D	A	E	A	C	A
Approach Delay	50.0		65.0			2.8
Approach LOS	D		E			A

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 115.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 39.0	Intersection LOS: D
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	

! Phase conflict between lane groups.

Splits and Phases: 1: SR 138 & US 78 WB Ramp



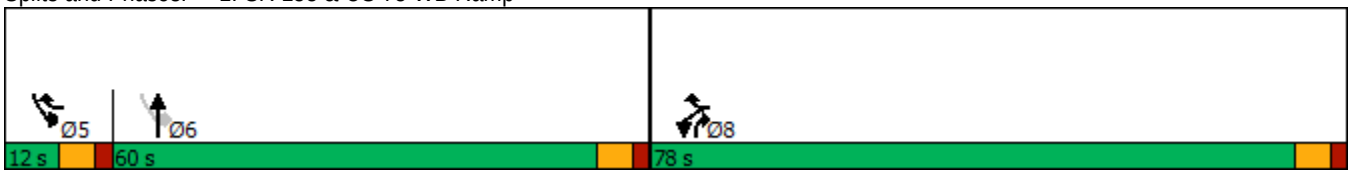
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	795	120	655	70	135	670
Future Volume (vph)	795	120	655	70	135	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1626	1455	1792	1524	1752	1845
Flt Permitted	0.950				0.074	
Satd. Flow (perm)	1626	1455	1792	1524	137	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		78		60		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	864	130	712	76	147	728
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	130	712	76	147	728
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	18		12			18
Link Offset(ft)	0		8			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	pt+ov	NA	pm+ov	D.P+P	NA
Protected Phases	8!	8 5	6	8	5	Free!
Permitted Phases				6	6	
Detector Phase	8	8 5	6	8	5	
Switch Phase						
Minimum Initial (s)	8.0		12.0	8.0	4.0	
Minimum Split (s)	24.0		24.0	24.0	10.0	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	78.0		60.0	78.0	12.0	
Total Split (%)	52.0%		40.0%	52.0%	8.0%	
Maximum Green (s)	72.0		54.0	72.0	6.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Min	None	None	
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	11.0		11.0	11.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)	72.0	84.0	54.0	132.0	60.0	150.0
Actuated g/C Ratio	0.48	0.56	0.36	0.88	0.40	1.00
v/c Ratio	1.11	0.15	1.10	0.06	1.24	0.39
Control Delay	102.8	7.1	111.6	0.4	187.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.8	7.1	111.6	0.4	187.2	0.6
LOS	F	A	F	A	F	A
Approach Delay	90.3		100.9			32.0
Approach LOS	F		F			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 74.2		Intersection LOS: E	
Intersection Capacity Utilization 101.0%		ICU Level of Service G	
Analysis Period (min) 15			

! Phase conflict between lane groups.

Splits and Phases: 1: SR 138 & US 78 WB Ramp

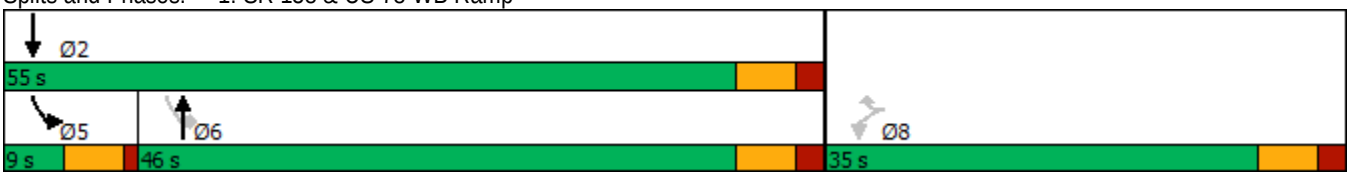


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	540	65	405	20	40	465
Future Volume (vph)	540	65	405	20	40	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3099	1429	1759	1495	1703	1792
Flt Permitted	0.950				0.360	
Satd. Flow (perm)	3099	1429	1759	1495	645	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		71		22		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	587	71	440	22	43	505
Shared Lane Traffic (%)						
Lane Group Flow (vph)	587	71	440	22	43	505
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	35.0	35.0	46.0	46.0	9.0	55.0
Total Split (%)	38.9%	38.9%	51.1%	51.1%	10.0%	61.1%
Maximum Green (s)	29.0	29.0	40.0	40.0	4.0	49.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	16.3	16.3	18.6	18.6	21.7	23.1
Actuated g/C Ratio	0.31	0.31	0.35	0.35	0.41	0.44
v/c Ratio	0.61	0.14	0.71	0.04	0.12	0.64
Control Delay	20.0	5.9	23.6	6.9	9.2	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	5.9	23.6	6.9	9.2	15.8
LOS	B	A	C	A	A	B
Approach Delay	18.5		22.8			15.3
Approach LOS	B		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 52.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	605	115	525	50	130	555
Future Volume (vph)	605	115	525	50	130	555
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3155	1455	1792	1524	1752	1845
Flt Permitted	0.950				0.222	
Satd. Flow (perm)	3155	1455	1792	1524	410	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		125		54		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	658	125	571	54	141	603
Shared Lane Traffic (%)						
Lane Group Flow (vph)	658	125	571	54	141	603
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	34.0	34.0	47.0	47.0	9.0	56.0
Total Split (%)	37.8%	37.8%	52.2%	52.2%	10.0%	62.2%
Maximum Green (s)	28.0	28.0	41.0	41.0	4.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	20.1	20.1	25.0	25.0	29.1	31.7
Actuated g/C Ratio	0.31	0.31	0.38	0.38	0.45	0.49
v/c Ratio	0.67	0.23	0.83	0.09	0.52	0.67
Control Delay	25.4	5.8	30.3	4.7	17.0	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	5.8	30.3	4.7	17.0	16.7
LOS	C	A	C	A	B	B
Approach Delay	22.3		28.1			16.7
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

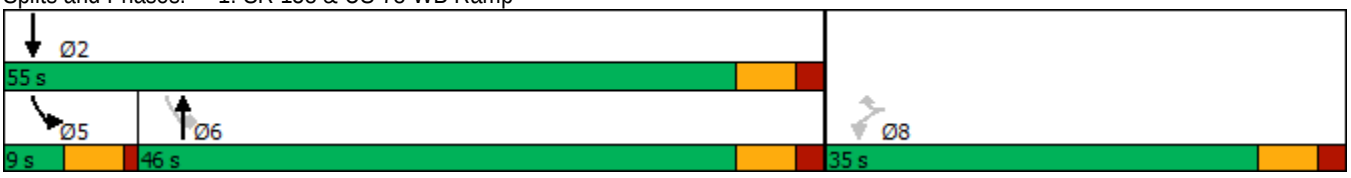
Splits and Phases: 1: SR 138 & US 78 WB Ramp

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	710	75	515	35	45	590
Future Volume (vph)	710	75	515	35	45	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3099	1429	1759	1495	1703	1792
Flt Permitted	0.950				0.235	
Satd. Flow (perm)	3099	1429	1759	1495	421	1792
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82		38		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	13%	13%	8%	8%	6%	6%
Adj. Flow (vph)	772	82	560	38	49	641
Shared Lane Traffic (%)						
Lane Group Flow (vph)	772	82	560	38	49	641
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	35.0	35.0	46.0	46.0	9.0	55.0
Total Split (%)	38.9%	38.9%	51.1%	51.1%	10.0%	61.1%
Maximum Green (s)	29.0	29.0	40.0	40.0	4.0	49.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	22.0	22.0	25.9	25.9	29.0	30.3
Actuated g/C Ratio	0.33	0.33	0.39	0.39	0.44	0.46
v/c Ratio	0.75	0.15	0.81	0.06	0.18	0.78
Control Delay	26.4	6.1	29.5	5.5	11.0	21.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	6.1	29.5	5.5	11.0	21.9
LOS	C	A	C	A	B	C
Approach Delay	24.5		28.0			21.1
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: SR 138 & US 78 WB Ramp



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	795	120	655	70	135	670
Future Volume (vph)	795	120	655	70	135	670
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300	300		250	275	
Storage Lanes	1	1		1	1	
Taper Length (ft)	200				100	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3155	1455	1792	1524	1752	1845
Flt Permitted	0.950				0.115	
Satd. Flow (perm)	3155	1455	1792	1524	212	1845
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		130		76		
Link Speed (mph)	35		45			45
Link Distance (ft)	1066		829			1087
Travel Time (s)	20.8		12.6			16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	6%	6%	3%	3%
Adj. Flow (vph)	864	130	712	76	147	728
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	130	712	76	147	728
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	24		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	1	0	1	1
Detector Template						
Leading Detector (ft)	40	40	336	0	40	336
Trailing Detector (ft)	0	0	330	0	0	330
Detector 1 Position(ft)	0	0	330	0	0	330
Detector 1 Size(ft)	40	40	6	20	40	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Perm	Perm	NA	Perm	D.P+P	NA
Protected Phases			6		5	2
Permitted Phases	8	8		6	6	
Detector Phase	8	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	8.0	8.0	12.0	12.0	4.0	12.0
Minimum Split (s)	24.0	24.0	24.0	24.0	9.0	24.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Total Split (s)	34.0	34.0	47.0	47.0	9.0	56.0
Total Split (%)	37.8%	37.8%	52.2%	52.2%	10.0%	62.2%
Maximum Green (s)	28.0	28.0	41.0	41.0	4.0	50.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	6.0
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	Min	Min	None	Min
Walk Time (s)	7.0	7.0	7.0	7.0		7.0
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		11.0
Pedestrian Calls (#/hr)	0	0	0	0		0
Act Effct Green (s)	25.8	25.8	34.8	34.8	39.9	44.0
Actuated g/C Ratio	0.31	0.31	0.42	0.42	0.49	0.54
v/c Ratio	0.87	0.24	0.94	0.11	0.82	0.74
Control Delay	38.5	5.7	44.1	4.0	48.8	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	5.7	44.1	4.0	48.8	20.1
LOS	D	A	D	A	D	C
Approach Delay	34.2		40.2			24.9
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 78.8%		ICU Level of Service D	
Analysis Period (min) 15			

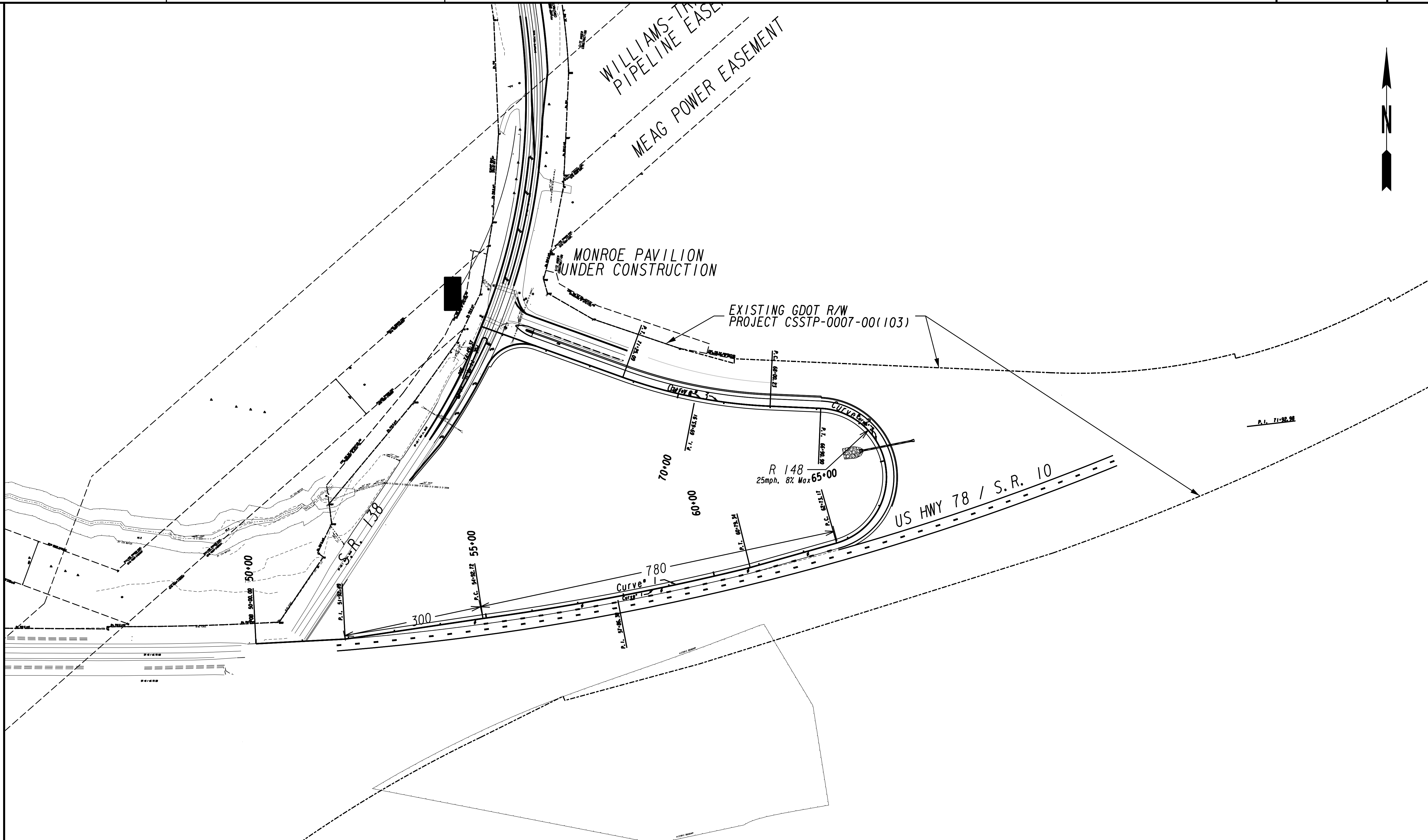
Splits and Phases: 1: SR 138 & US 78 WB Ramp

Attachment D

PI #0015421 Concept

9/24/2020 8:06:54 AM
397MA
GPLOT-V8
gplotborder-V8i-PO.tbl
CONCEPT ALT 2 LOOP-MM sheet.dgn

P.I. No. 0015421



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REVISION DATES

CONCEPT PLAN

P.I. 0015421

RAMP ALTERNATIVE 2 REV.

CHECKED:		DATE:	
BACKCHECKED:		DATE:	
CORRECTED:		DATE:	
VERIFIED:		DATE:	

DRAWING No.
CP-2R

10/23/2015 GPLN

MEETING MINUTES
Concept Team Meeting

Date of Meeting: **July 9, 2020**
Location: **MS Teams Meeting, hosted by GDOT**
Project Discussed: **PI 0015421, SR 138 AT SR10/US 78 (On-Ramp)**

Attendees:
-Kimberly Kimbrough – GDOT PM
-Jimmy Parker – Precision Planning
-Joel Seagraves – D1 Roadway Design
-Krystal Stovall-Dixon – AOH, GDOT Office of Program Delivery
-Kim Coley – D1 Planning and Programming Engineer
-Chris Maddox – Southeastern Engineering
-Jessica Blankenship – D1 Office
-Shane Giles – D1 Traffic Operations
-Harold Mull – D1 Construction
-Sue Anne Decker – D1 Preconstruction Engineer
-Cleopatra James – D1 Program Manager
-Carol Kalafut – GDOT Office of Bridge Design
-Jonathan Diogiola – GDOT PM
-Justin Lott – D1 Roadway Design
-Butch Jones – D1 Utilities
-Andrew Pearson – GDOT Office of Traffic Operations
-Bill Crowder – Precision Planning
-Laura Kirk – Precision Planning
-Mike Alligood – Precision Planning
-Royce Bradley
-Robert Simpson – D1 Construction
-Troy Tucker – D1 Office
-Jonathan Dills – D1 ROW
-Judy Prince – D1 Office
-Parker Neibauer – D1 Roadway Design
-Dave Peters – GDOT Office of Design Policy & Support
-Rachael Rosentein – GDOT Office of Environmental Services
-Kimberly Nesbitt – OH, Office of Program Delivery
-Jonathan Peevey – D1 Traffic Operations
-Jennifer Napier – VHB
-Christopher Raymond – GDOT Office of Traffic Operations

THE FOLLOWING ITEMS WERE DISCUSSED:

- Introduction of attendees was provided by GDOT.
- GDOT stated the goal to have the project schedule completed by early August.
- PPI presented the Concept Team Meeting PowerPoint presentation.
- GDOT stated the goal to have the project schedule completed by early August.
- GDOT plans to expedite the accelerated schedule (proposed let date July 2021); this will require a commitment from the design team to provide an initial submittal with quality work.
- PPI to confirm there are no cattle pass (Ex. 6x4 RCBC) stipulations within the current agreement/deed during the property title search.
- Johnathan Dills asked if current property was being used – it was answered that it was not.
- PPI has submitted survey/database package for review to the GDOT.
- GDOT will begin environmental reviews once a baseline schedule is approved.
- GDOT asked if there would be any challenges with building a wall over one of the culverts. Answer was the project geotechnical engineer will evaluate the integrity of the culvert, and with the structural engineer will review the load bearing capacity to ensure soundness of the design.
- Design Team suggests that a PIOH should be waived since the project is an operational improvement, apparently not controversial and no detour is proposed; Walton County to request a formal waiver from GDOT for a PIOH waiver.
- GDOT is presently reviewing the Monroe Pavilion traffic signal plans, and suggested that PPI follow up for updated plans from Columbia Engineering.
- Williams-Transco Pipelines (W-T) will require a Preliminary Engineering Agreement to coordinate design over their pipelines
- GDOT asks PPI to obtain construction restrictions/requirements from W--T (e.g., compaction and vibration requirements) prior to construction start; must include these documents part of the construction contract.
- GDOT R/W did not have any project concerns at this time.
- A project detour will not be required.
- A comment was brought up that if any utilities conflict with existing transmission poles that a 6 month lead time may be needed for pole relocation.
- The general process for utility coordination will be either 1st and 2nd Submission, or SUE and 2nd Submission; required follow-up for confirmation/agreement on plan for coordination.
- GDOT's 2nd Submission schedule is approximately 90 days to get back all information needed from all utility owners
- GDOT anticipates a SUE QL-A at the W-T gas mains.

- GDOT requested PPI to look into combining the two driveways to W-T and MEAG into one beyond the limits of access to eliminate use by the publicwithin the on ramp.
- GDOT requested PPI to make sure merging meets ASHTO and is long enough
- Schedule was once again mentioned with the hopes of it being submitted for approval roughly by July 17th, 2020.
- Any underground wiring and/or pull boxes for the traffic signal, there will be a required modification.

Additional general discussion is included as follows:

1. From Justin Lott, D1 Roadway Design (DRAFT Concept Report comments)
   - Page 21 typical sections: change the delta symbol to indicate the superelevation of shoulder matches superelevation of travel way. Normal crown sections have the same slope for travel way and paved shoulder (2%).
   - Page 21 typical sections: investigate if the square symbol be changed to slope with the travel way.
   - Page 23 vertical curve at PVI 40+85 does not meet the minimum K-value for a crest vertical curve. It is currently shown as 58.13. According to the Geen Book, the minimum K-value for a crest vertical curve (45 mph) is 61. This vertical curve may be modified in order to not require a design variance.
   - Page 24:- Ensure estimates match. Construction estimate differ on these forms. Only show the contingency computed/added on the GDOT sheet (page 26).
   - Page 26: Update to newest monthly costs for fuel and AC prior to submission.
   - Page 27: Not needed. These costs are calculated on page 26.
   - Any underground wiring and/or pull boxes for the traffic signal, there will be a required modification.

c: Attendees
Project File: T20053